Faculty Development Program training for POs and COs mapping

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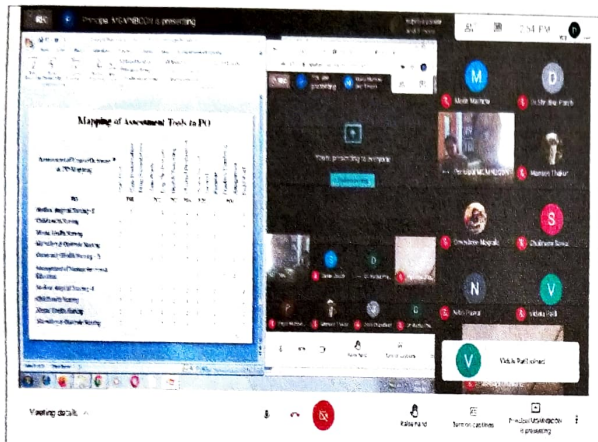	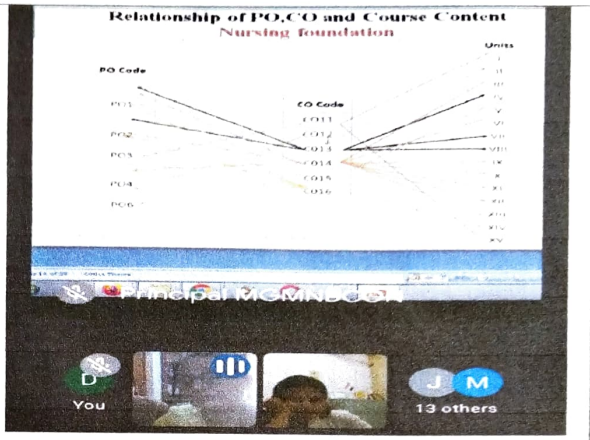
Explanation of mapping of assessment tools by Dr. (Mrs) Prabha K. Dasila Professor- Director and Dr. (Mrs) R. Ponchitra Professor & Vice- principal	Explanation of Relationship of PO, CO & course content by Dr. (Mrs) Prabha K. Dasila Professor- Director and Dr. (Mrs) R. Ponchitra Professor & Vice- principal

Dr. Rucha Pradhan (PT)	Dr. Shrutika Parab (PT)	Dr. Bela Agarwal (PT)	Dr. Rajani Mullerpatan
Criteria I coordinator, MGMSOPNM	IQAC Coordinator, MGMSOPNM	Criteria I In-charge, MGMSOPNM	Professor- Director Head of Institute

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Date: 16/03/2021

CIRCULAR

Faculty Training on Curriculum Mapping

This is to bring to your notice that MGM School of Physiotherapy is organizing a faculty training session on 16-03-2021through Zoom at MGM School of Physiotherapy between 2.30 p.m. – 3.30 p.m. Following faculty are instructed to attend the same.

Sr.no	Name of Faculty	Signature
1.	Dr.Bela Agarwal (PT)	
2.	Dr.TejashreeDabholkar	
3.	Dr.Rucha Pradhan (PT)	
4.	Dr.Diksha Basu (PT)	
5.	Dr.Shrutika Parab (PT)	

- By Order

Report Prepared by: Dr. Priyanka Pareek

Assistant Professor,
Dept. Of Clinical Nutrition
MGM School of Biomedical Science, Navimumbai, Kamothe
Contact no. 8143640995 s

Director
MGM School of Biomedical Science
Kamothe, Navi Mumbai

MGM SCHOOL OF BIOMEDICAL SCIENCES
KAMOTHE
MUMBAI

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Event Name: PO CO mapping

Date & Time:9/5/ 2021 11a.m.-1.00p.m.

Location: New Bombay Nursing college

Sr. No.	Event Tile & Venue Details	Program Coordinators (Team members name)	Total No. of Participants
1	Introduction of PO CO Mapping	Dr.Paunchitra	SBS, Teaching staff
2.	PO CO FORMATION and Relationship and matrix	Dr. Paunchitra	SBS Teaching staff

Kindly attach 4 photographs

PO CO Introduction

Discussion on PO CO Mapping

Short event report

The session on PO CO Mapping was conducted by SBS to explain the importance and concept of PO CO under Choice Based Credit System. The session had been taken by the MGM New Bombay Nursing faculty Dr.Paunchitra, also she is a Vice Principal of Nursing college. She explained all the steps to find out the relationship between PO and CO. It was interactive session, was very helpful to assess PO CO matrix.

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Assistant Professor,
Dept. Of Clinical Nutrition
MGM School of Biomedical Science, Navimumbai, Kamothe
Contact no. 8143640995

Director
MGM School of Biomedical Science
Kamothe, Navi Mumbai

M.G.M. SCHOOL OF BIO-MEDICAL SCIENCES * KAMOTHE NAVI MUMBAI

Event Name: PO CO mapping Discussion

Date & Time:11/8/ 2021 10a.m.-1.00p.m.

Location: Conference hall MGM,SBS

Sr. No.	Event Tile & Venue Details	Program Coordinators (Team members name)	Total No. of Participants
1	Programm wise PO CO Discussion	Dr.Mansee Thakur	SBS, Teaching staff

Kindly attach 4 photographs

PO CO Discussion

Discussion on PO CO Mapping

The session on PO CO Mapping was conducted under the guidance of Dr. Mansee Thakur to discuss the program wise PO CO for UG and PG Courses. We have discussed our doubts related to PO wise CO ranking then average ranking and relationship percentage.

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Report On Faculty Development Program for Curriculum Mapping

Date: 16th March, 2021

Time: 2.30 – 3.30 pm

Organized by: MGM New Bombay College of Nursing

Venue: MGM New Bombay College of Nursing

Mode: Online webinar on Google meet

Speakers:

1. Dr. (Mrs) Prabha Dasila
2. Dr. (Mrs) R. Ponchitra

Attendees:

1. Dr. Bela Agarwal (PT)
2. Dr. Tejashree Dabholkar
3. Dr. Shrutika Parab (PT)
4. Dr. Rucha Pradhan (PT)
5. Dr. Diksha Basu (PT)

Summary:

In context with the Criteria I meeting conducted on 16th March 2021 at MGMIHS, curriculum mapping was to be performed as a part of NAAC Criteria I.

An online webinar was conducted on curriculum mapping by Dr. (Mrs) Prabha Dasila (Professor-Director) and Dr. (Mrs) R. Ponchitra (Professor & Vice- principal) on 16th March 2021 via Google meet platform. The procedure of correlation of program outcomes and course outcomes was explained.

Curriculum mapping strength was described in detail based on the correlation of program and course outcomes and hours allotted to each unit of course in the respective program. The level of mapping strength to be calculated based on the percentage of hours allotted was explained.

Mapping of each course in the curriculum was to be formulated and analysed for respective program. An example of mapping was explained through powerpoint presentation for courses in Nursing program. Doubt solving session was conducted related to curriculum mapping was conducted at the end.

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POs, COs Mapping & Outcome Analysis.

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Outcome analysis of POs and COs

- The Institute has clearly stated program outcomes (POs) and course outcomes (COs) for its all-academic programmes department wise.
- The Faculty and students are made aware of the learning outcomes at beginning of academic session.
- Course outcomes and objectives are printed in syllabus of each course. The process of mapping of course outcomes-programme outcomes is ongoing.
- Analysis of Program outcomes is achieved by formative and summative evaluation.
- A handbook with details of each department is provided to the students at the beginning of academic session.
- Log books and departmental journals are maintained by the students.
- The students and teachers are provided with academic calendar wherein planning is done for the entire Semester providing all the learning objectives and outcomes at various levels.
- The faculty is trained regarding formulationg and achieving teaching-learning objectives and outcome evaluation by training programmes conducted by the Medical Education Technology cell.
- At the College and University level IQAC and the University has apex role in monitoring, and reforming all the strategies related to teaching learning and assessment.
- The College regularly monitors the performance of the students via internal examinations, viva-voce, and University examinations.
- Extra/remedial classes/tutorial sessions and mentoring sessions are conducted for slow learners.

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The Institution has a well- structured feedback mechanism system in place. Feedback is obtained from all stakeholders such as students, teachers, employers, parents, alumni and professionals regarding curricular aspects, teaching learning processes, infrastructure, etc. The feedback is analyzed at departmental level and at the University level. After analysis, corrective actions are initiated and monitored. Evaluation of learning objectives includes both direct and indirect methods. The direct methods include tests, presentations, laboratory work, student projects, seminars, Problem- Based-Learning, Journal clubs, quizzes, assignments, portfolios, six monthly progress reports, logbook for students' work, participation in competitive exams, intercollegiate competitions, multiple choice questions (MCQs), objective structured clinical examination (OSCE), short and long case assessment, simulators, peer assessment and others. The indirect methods include surveys, such as feedback from students, faculty members, employer or alumni, job placement rates, self-evaluations.

- The institution has formulated course outcomes to make the students more competent with respect to all domains of learning (Cognitive, Affective and Psychomotor domains). Accordingly, their learning assessment is conducted in form of formative and summative assessment.

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Domains of learning	Methods of Assessment	Students
Cognitive Domain	MCQ	UG & PG
	SAQ	
	LAQ	
	Viva-voce	
Affective	Short case	UG & PG
	Long case	
	OSCE	
	OSPE	
	Group Discussions	
	PBL	UG & PG
	SLOT	
	Think-Pair-Share	
	Community services, Support group activities, Patient feedback	
Psychomotor	Short case	UG &PG
	Long case	
	OSCE/ OSPE	
	Practical's	
	Case discussions	
	BLS	PG
	ACLS	
	Community services, Support group activities, Patient feedback	

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Modes of Assessment	Methods of Assessment	Students
Formative:	MCQ	UG & PG
	SAQ	
	LAQ	
	Viva-voce	
	OSPE	
	OSCE	
	Quiz	
	Seminars	
	PBL	
	Assignments	
	Portfolios	
	Six monthly Progressive report	PG
	Journals	UG
Summative	Dissertation	PG
	MCQ	UG & PG
	SAQ	
	LAQ	
	Practical's and Viva-voce	
	OSPE	
	OSCE	

- The curricula developed and implemented have relevance to Local, Regional, National and Global healthcare needs leading to well defined graduate attributes:
  - Dynamic Professionalism
  - Exemplary Leadership
  - Communication Skills

- Scholarly Attitude
- Element of Critical Thinking
- Enthusiasm for Research
- Social Commitment
- Global Competencies

The summative assessment is conducted at the university level which includes written & practical examination. The students' achievement is categorized into:

Levels	Percentage	Attainment of Outcomes
Level 0	Below 50% (Failed).	Unable to acquire all competencies (COs) of the respective course
Level 1	50-59%	Have acquired all competencies (COs) of the respective course
Level 2	60-69%,	
Level 3	70% and above	

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II BPT (2020-21)

Pharmacology			Psychiatry including Psychology			Kinesiology			Kinesiotherapy			Electrotherapy			Microbiology		
Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%
Below 50% (Failed)	3	25	Below 50% (Failed)	3	27	Below 50% (Failed)	2	13	Below 50% (Failed)	4	33	Below 50% (Failed)	4	29	Below 50% (Failed)	1	10
50-59%	7	58	50-59%	6	55	50-59%	10	67	50-59%	6	50	50-59%	7	50	50-59%	6	60
60-69%	1	8	60-69%	1	9	60-69%	3	20	60-69%	2	17	60-69%	2	14	60-69%	2	20
70% and above	1	8	70% and above	1	9	70% and above	0	0	70% and above	0	0	70% and above	1	7	70% and above	1	10

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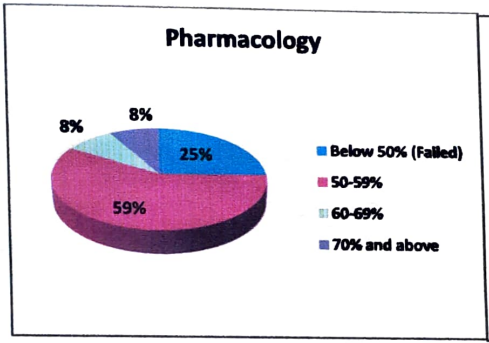

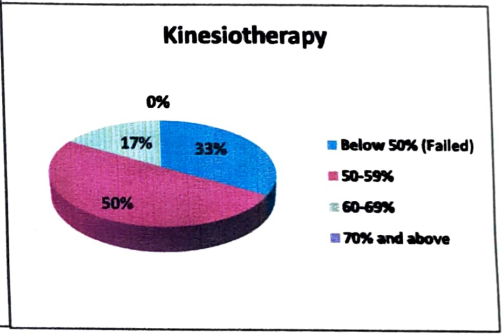

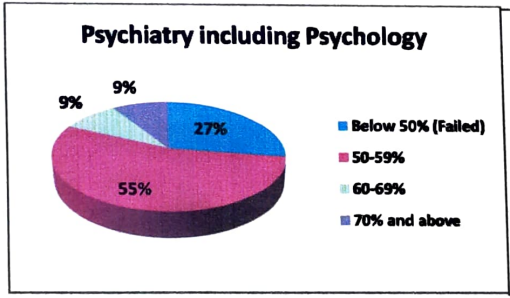

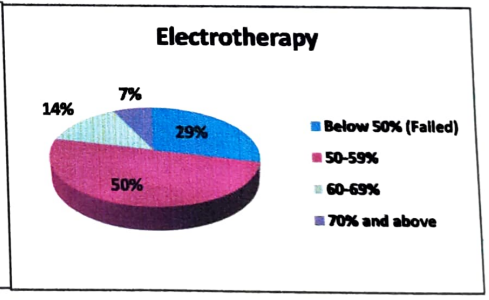

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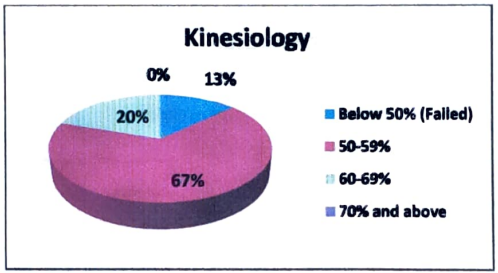

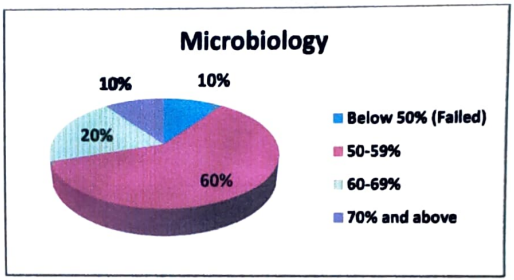

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III BPT (2020-21)

SURGERY I			SURGERY II			MEDICINE I			MEDICINE II			COMMUNITY HEALTH			FUNCTIONAL DIAGNOSIS		
Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%
Below 50% (Failed)	2	3	Below 50% (Failed)	6	9	Below 50% (Failed)	0	0	Below 50% (Failed)	4	6	Below 50% (Failed)	3	5	Below 50% (Failed)	8	13
50-59%	42	67	50-59%	44	65	50-59%	38	59	50-59%	29	47	50-59%	41	65	50-59%	36	57
60-69%	17	27	60-69%	13	19	60-69%	25	39	60-69%	25	40	60-69%	19	30	60-69%	19	30
70% and above	2	3	70% and above	5	7	70% and above	1	2	70% and above	4	6	70% and above	0	0	70% and above	0	0

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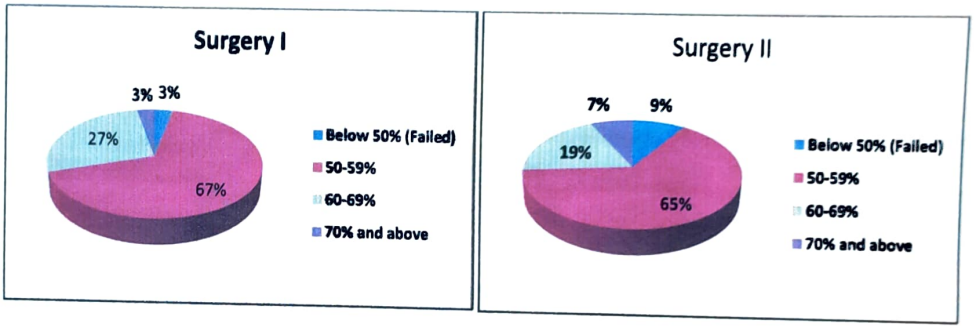

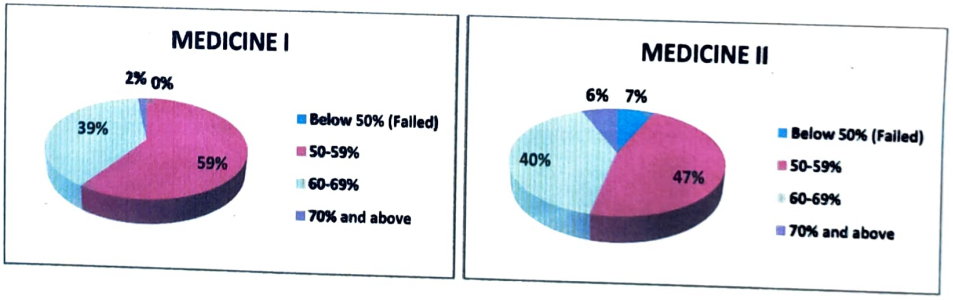

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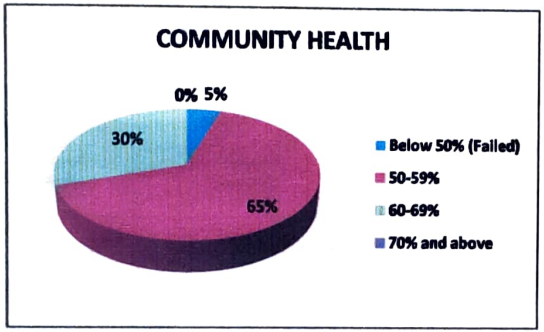

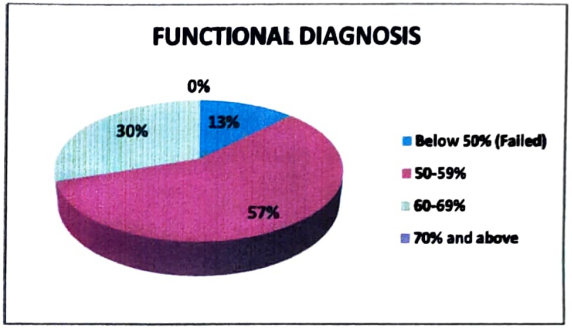

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BPT Semester III (2020-21)

Kinesiology			Clinical applications of Kinesiology			Electrotherapy (Theory)			Electrotherapy (Practical)			Pharmacology			Psychology and Psychiatry		
Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%
Below 50% (Failed)	25	25	Below 50% (Failed)	2	2	Below 50% (Failed)	23	23	Below 50% (Failed)	2	2	Below 50% (Failed)	20	19	Below 50% (Failed)	2	2
50-59%	57	56	50-59%	14	13	50-59%	66	65	50-59%	55	54	50-59%	58	56	50-59%	1	1
60-69%	18	18	60-69%	23	22	60-69%	13	13	60-69%	17	17	60-69%	22	21	60-69%	1	1
70% and above	2	2	70% and above	65	63	70% and above	0	0	70% and above	28	27	70% and above	4	4	70% and above	101	96

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BPT Semester III (2020-21)

Yoga (theory)			Yoga (practical)			Ergonomics and health promotion			Personality development and learning styles			Basic skills in patient care(I)		
Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%
Below 50% (Failed)	0	0	Below 50% (Failed)	0	0	Below 50% (Failed)	0	0	Below 50% (Failed)	0	0	Below 50% (Failed)	1	1
50-59%	2	2	50-59%	9	9	50-59%	5	5	50-59%	0	0	50-59%	23	22
60-69%	16	15	60-69%	17	16	60-69%	33	33	60-69%	0	0	60-69%	31	30
70% and above	87	83	70% and above	79	75	70% and above	63	62	70% and above	4	100	70% and above	50	48

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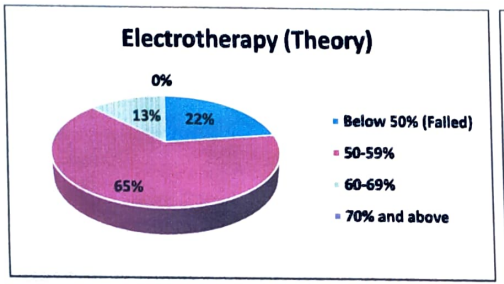

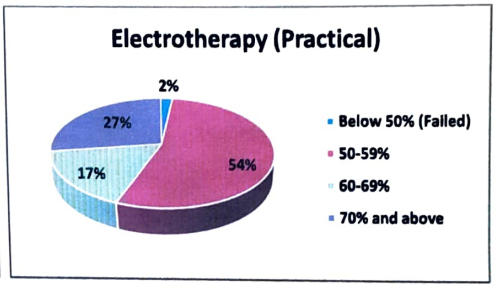

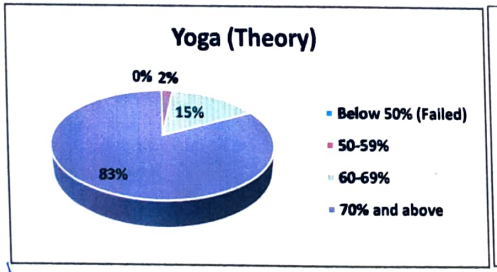

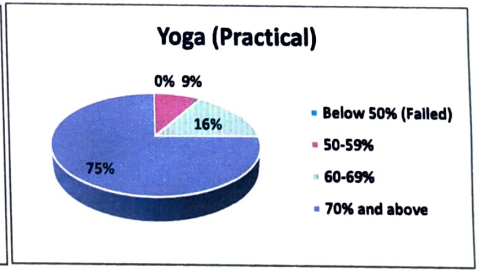

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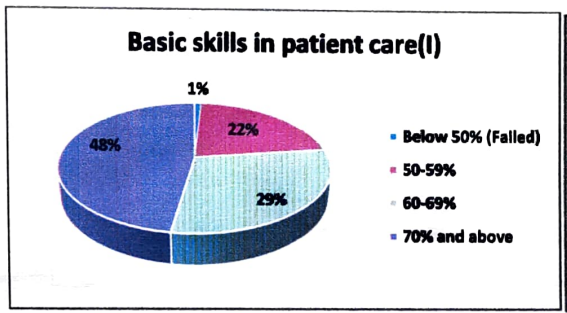

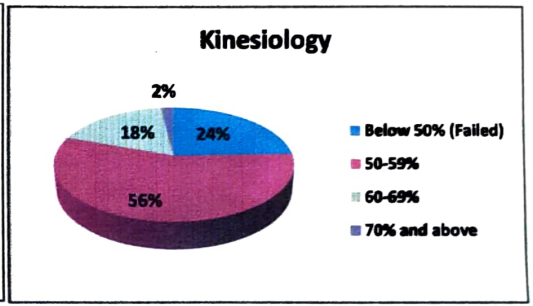

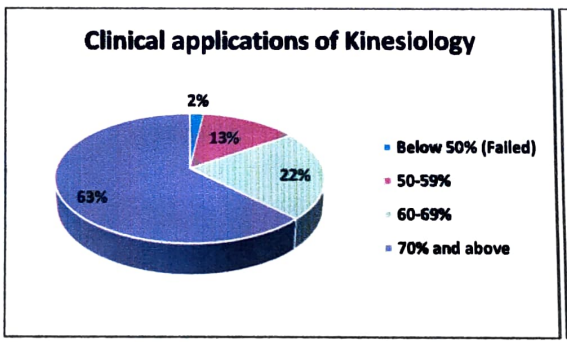

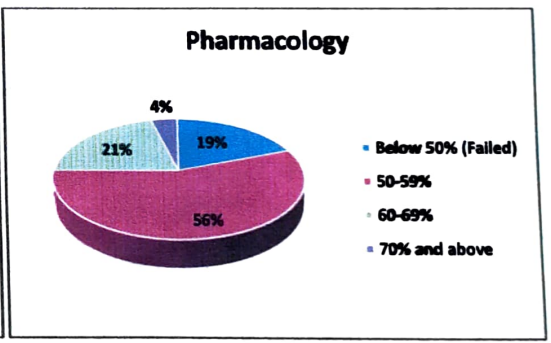

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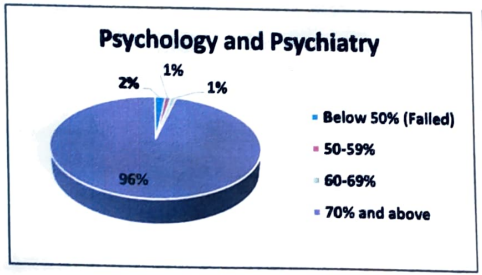

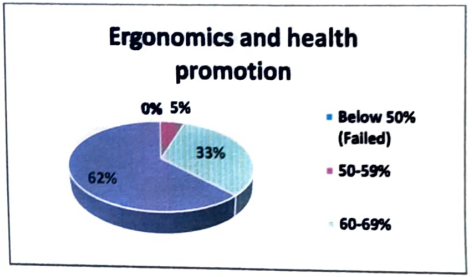

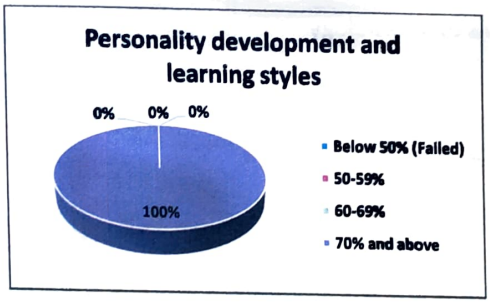

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IV BPT Regular batch (2020-21)

Musculoskeletal Physiotherapy			Neurophysiotherapy			Cardiovascular and Respiratory Physiotherapy			Community Physiotherapy		
Level	**No of Students**	**%**	**Level**	**No of Students**	**%**	**Level**	**No of Students**	**%**	**Level**	**No of Students**	**%**
Below 50% (Failed)	3	6	Below 50% (Failed)	0	0	Below 50% (Failed)	0	0	Below 50% (Failed)	0	0
50-59%	32	60	50-59%	38	70	50-59%	15	29	50-59%	22	43
60-69%	18	34	60-69%	16	30	60-69%	28	54	60-69%	28	55
70% and above	0	0	70% and above	0	0	70% and above	9	17	70% and above	1	2

MGM School of Physiotherapy NAVI MUMBAI

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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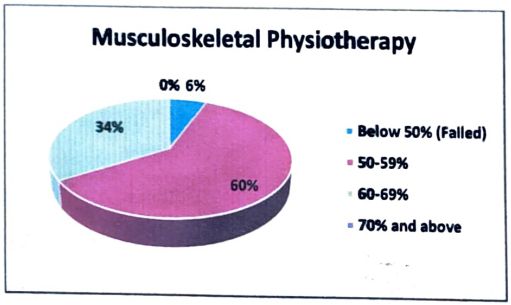
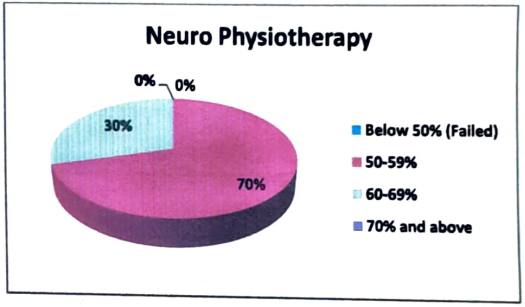
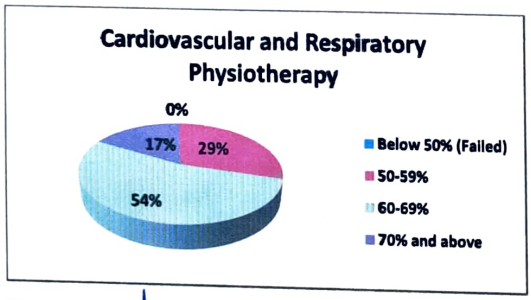
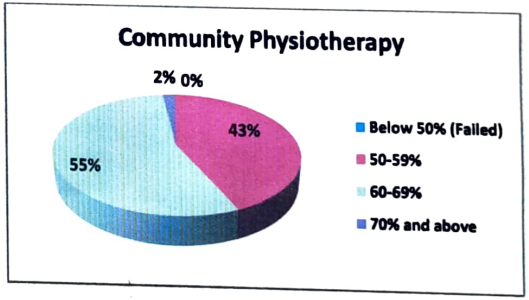
Sector-1, Kamothe, Navi Mumbai – 410209









Criterion I Incharge

Professor
MGM School of Physiotherapy
Navi Mumbai

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Head of Institute

Professor - Director
MGM School of Physiotherapy
MGMIHS, Navi Mumbai

MGM School of Physiotherapy, Aurangabad.
POs, COs Mapping & Outcome Analysis.

MGM Institute of Health Sciences

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MGM School of Physiotherapy

N-6 CIDCO, Aurangabad-431003

Tel No. 0240-6482000, (Ext. 2912/2913), E-mail: mgmsop@themgmgroup.com

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Outcome analysis of POs and Cos

- The Institute has clearly stated program outcomes (POs) and course outcomes (COs) for its all-academic programmes department wise.
- The Faculty and students are made aware of the learning outcomes at beginning of academic session. Course outcomes and objectives are printed in syllabus of each course. The process of mapping of course outcomes programme outcomes is ongoing.
- Analysis of Program outcomes is achieved by formative and summative evaluation.
- A handbook with details of each department is provided to the students at the beginning of academic session.
- Log books and departmental journals are maintained by the students.
- The students and teachers are provided with academic calendar wherein planning is done for the entire Semester providing all the learning objectives and outcomes at various levels.
- The faculty is trained regarding formulating and achieving teaching-learning objectives and outcome evaluation by training programmes conducted by the Medical Education Technology cell.
- At the College and University level IQAC and the University has apex role in monitoring, and reforming all the strategies related to teaching learning and assessment.
- The College regularly monitors the performance of the students via internal examinations, viva-voce, and University examinations.
- Extra/remedial classes/tutorial sessions and mentoring sessions are conducted for slow learners

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- The Institution has a well- structured feedback mechanism system in place. Feedback is obtained from all stakeholders such as students, teachers, employers, parents, alumni and professionals regarding curricular aspects, teaching learning processes, infrastructure, etc. The feedback is analyzed at departmental level and at the University level. After analysis, corrective actions are initiated and monitored. Evaluation of learning objectives includes both direct and indirect methods. The direct methods include tests, presentations, laboratory work, student projects, seminars, Problem- Based-Learning, Journals clubs, quizzes, assignments, portfolios, six monthly progress reports, logbook for students' work, participation in competitive exams, intercollegiate competitions, multiple choice questions (MCQs), objective structured clinical examination (OSCE), short and long case assessment, simulators, peer assessment and others. The indirect methods include surveys, such as feedback from
- Students, faculty members, employer or alumni, job placement rates, self-evaluations
- The institution has formulated course outcomes to make the students more competent with respect to all domains of leaning (Cognitive, Affective and Psychomotor domains). Accordingly, their learning assessment is conducted in form of formative and summative assessment.

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Domains of learning	Methods of Assessment	Students
Cognitive Domain	MCQ	UG &PG
	SAQ	
	LAQ	
	Viva-voce	
Affective	Short case	UG &PG
	Long case	
	OSCE	
	Group Discussions	
	PBL	UG &PG
	SLOT	
	Think-Pair-Share	
	Community services, Support group activities, Patient feedback	
Psychomotor	Short case	UG &PG
	Long case	
	OSCE / OSPE	
	Practical's	
	Case discussions	
	BLS	PG
	ACLS	
	Community services, Support group activities, Patient feedback	

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Modes of Assessment	Methods of Assessment	Students
Formative:	MCQ	UG &PG
	SAQ	
	LAQ	
	Viva-voce	
	OSPE	
	OSCE	
	Quiz	
	Seminars	
	PBL	
	Assignments	
	Portfolios	
	Six monthly Progressive report	PG
	Journals	UG
Summative	Dissertation	PG
	MCQ	UG&PG
	SAQ	
	LAQ	
	Practical's and Viva-voce	
	OSPE	
	OSCE	

- The curricula developed and implemented have relevance to Local, Regional, National and Global healthcare needs leading to

Well defined graduate attributes:

- Dynamic Professionalism
- Exemplary Leadership
- Communication Skills
- Scholarly Attitude

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- Element of Critical Thinking
- Enthusiasm for Research
- Social Commitment
- Global Competencies

The summative assessment is conducted at the university level which includes written & practical examination. The student's achievement is categorized into:

Levels	**Percentage**	**Attainment of Outcomes**
Level 0	Below 50% (Failed).	Unable to acquire all competencies (COs) of the respective course
Level 1	50-59%	Have acquired all competencies (COs) of the respective course
Level 2	60-69%,	
Level 3	70% and above	

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I BPT (2020-21)

Human Anatomy			Human Physiology			Kinesiotherapy			BPME			English & Communication skills			EVS			Basic skills		
Level	No of students	%	Level	No of students	%	Level	No of students	%	Level	No of students	%	Level	No of students	%	Level	No of students	%	Level	No of students	%
Below 50% (Failed	57	65	Below 50% (Failed	54	61	Below 50% (Failed	40	45.	Below 50% (Failed	20	22	Below 50% (Failed	0	0	Below 50% (Failed	29	32	Below 50% (Failed	1	1
50-59%	37	42	50-59%	30	34	50-59%	34	38	50-59%	55	62	50-59%	10	11	50-59%	24	27.	50-59%	35	39
60-69%	6	6	60-69%	7	7	60-69%	12	13.	60-69%	13	14	60-69%	17	19	60-69%	17	19.	60-69%	36	40
70 % and above	0	0	70 % and above	2	2	70 % and above	2	2	70 % and above	4	4	70 % and above	44	50	70 % and above	22	25	70 % and above	16	18

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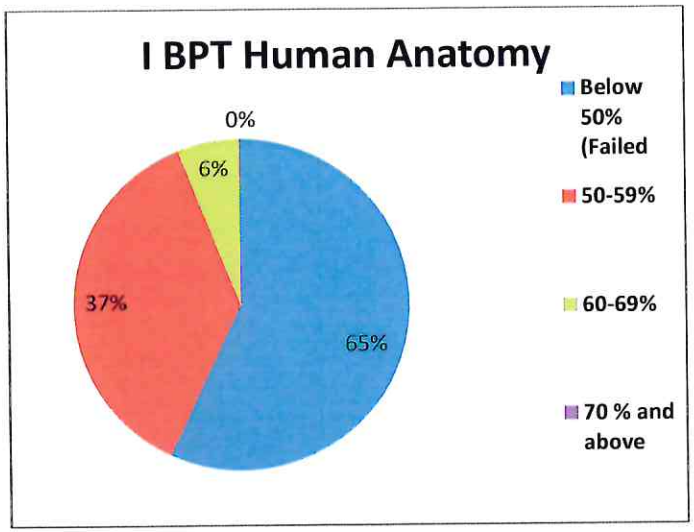

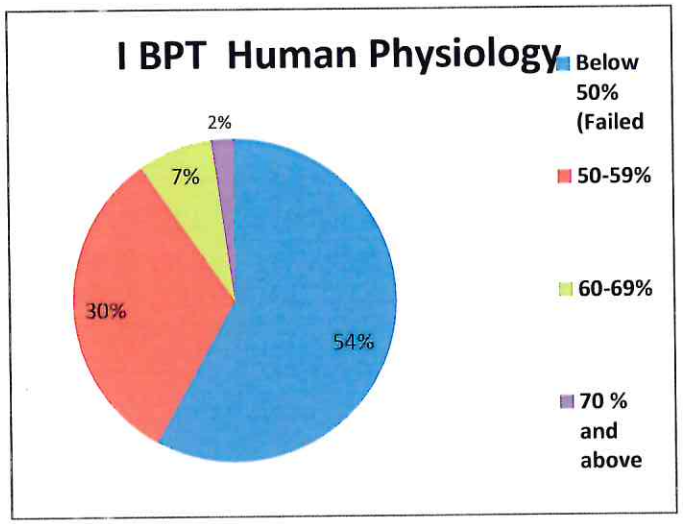

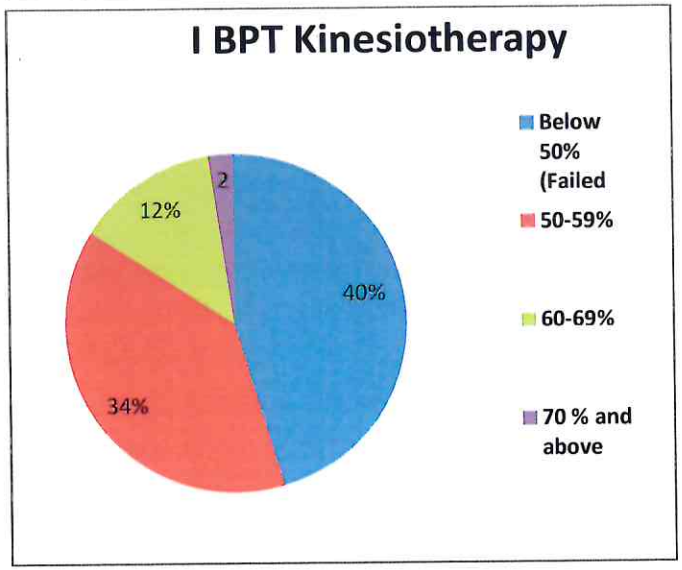

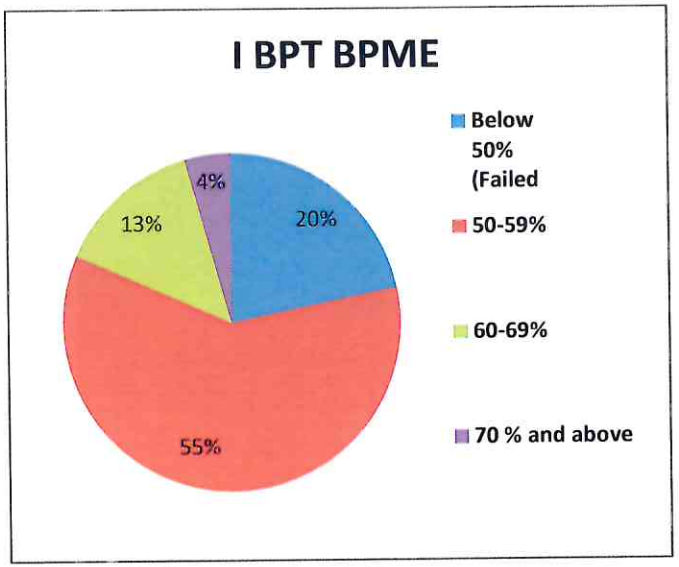

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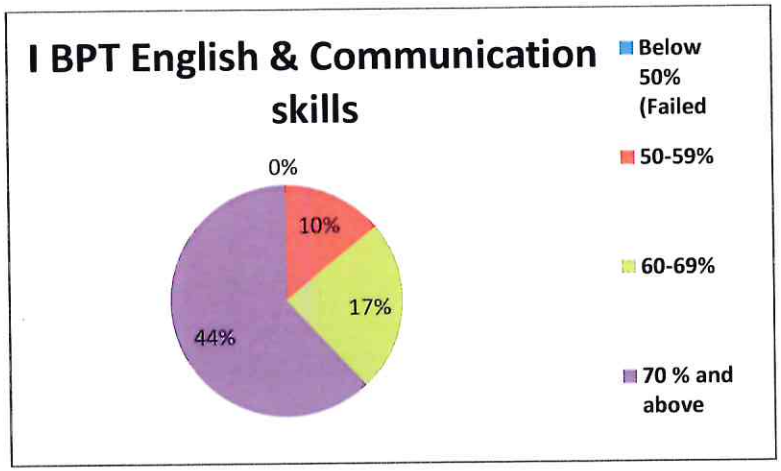

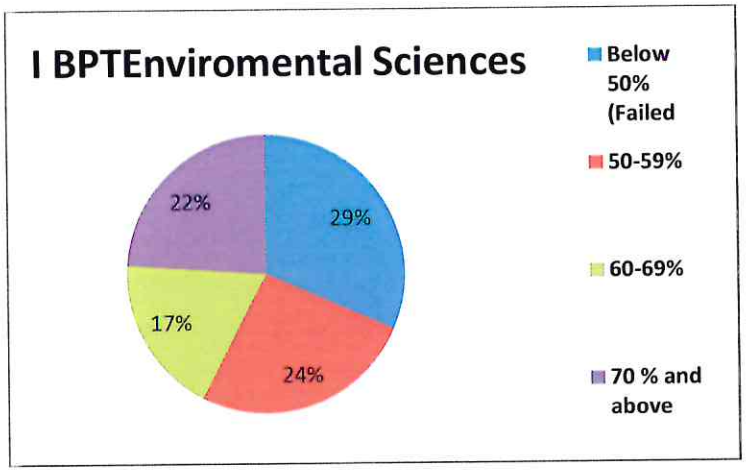

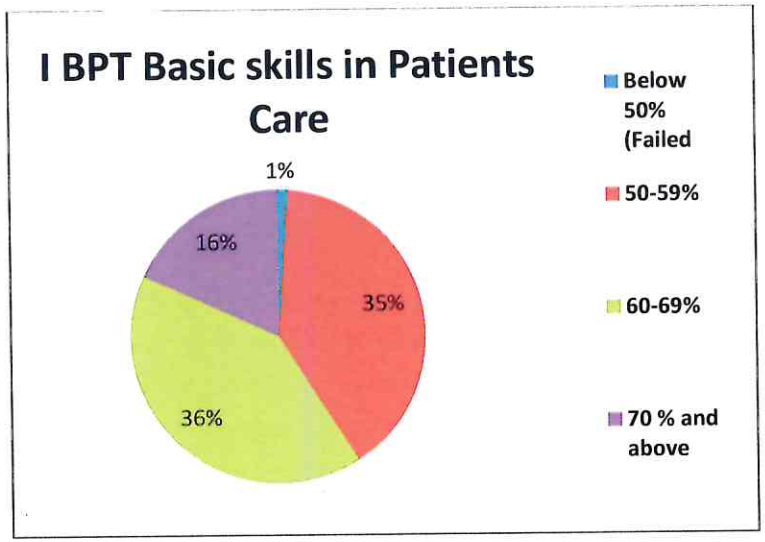

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II BPT CBCS, III Semester (2020-21

Pharmacology			**Psychiatry including Psychology**			**Kinesiology**			**Kinesiotherapy**			**Electrotherapy Theory**		
Level	**No of students**	**%**	**Level**	**No of students**	**%**	**Level**	**No of students**	**%**	**Level**	**No of students**	**%**	**Level**	**No of students**	**%**
Below 50% (Failed)	9	15	**Below 50% (Failed)**	42	71	**Below 50% (Failed)**	13	22	**Below 50% (Failed)**	2	3	**Below 50% (Failed)**	9	15
50-59%	36	61	**50-59%**	15	25	**50-59%**	43	72.	**50-59%**	27	45	**50-59%**	32	54
60-69%	13	22	**60-69%**	2	3	**60-69%**	3	5	**60-69%**	23	38	**60-69%**	16	27
70 % and above	1	1	**70 % and above**	0	0	**70 % and above**	0	0	**70 % and above**	7	11	**70 % and above**	2	3

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Electro therapy practical			Ergonomics			Basic Skills in patients care			Yoga Theory			Yoga Practical		
Level	**No of students**	**%**	**Level**	**No of students**	**%**	**Level**	**No of students**	**%**	**Level**	**No of students**	**%**	**Level**	**No of students**	**%**
Below 50% (Failed)	3	5	**Below 50% (Failed)**	10	16	**Below 50% (Failed)**	0	0	**Below 50% (Failed)**	0	0	**Below 50% (Failed)**	0	0
50-59%	8	13	**50-59%**	20	33	**50-59%**	31	52	**50-59%**	17	28	**50-59%**	14	23
60-69%	31	52	**60-69%**	12	20	**60-69%**	28	47	**60-69%**	22	37	**60-69%**	15	25
70 % and above	17	28	**70 % and above**	17	28	**70 % and above**	0	0	**70 % and above**	20	33	**70 % and above**	30	50

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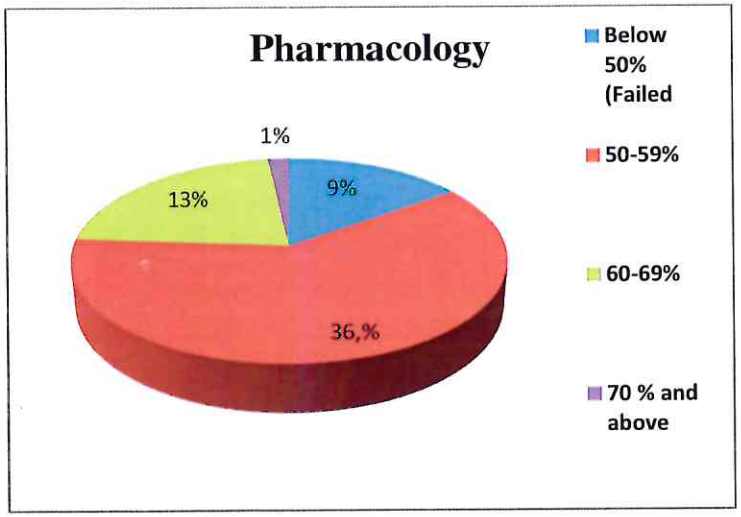

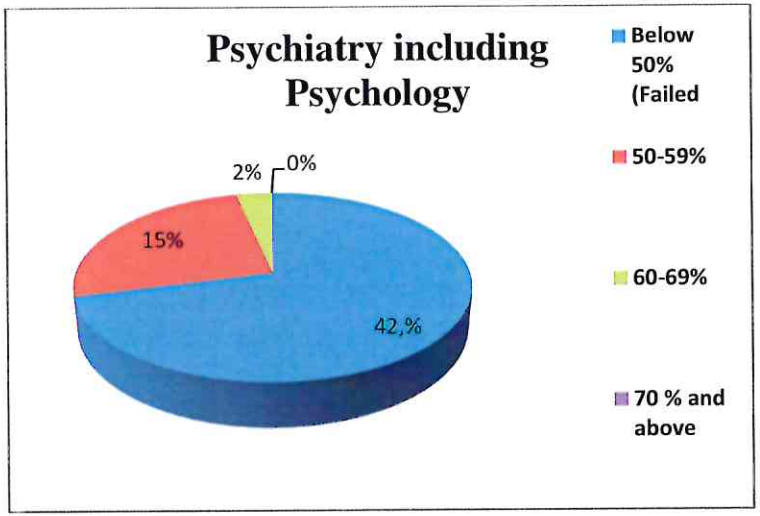

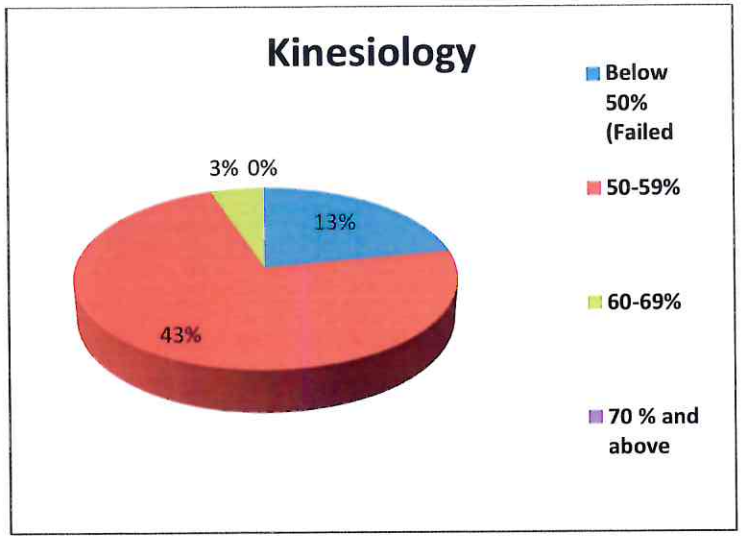

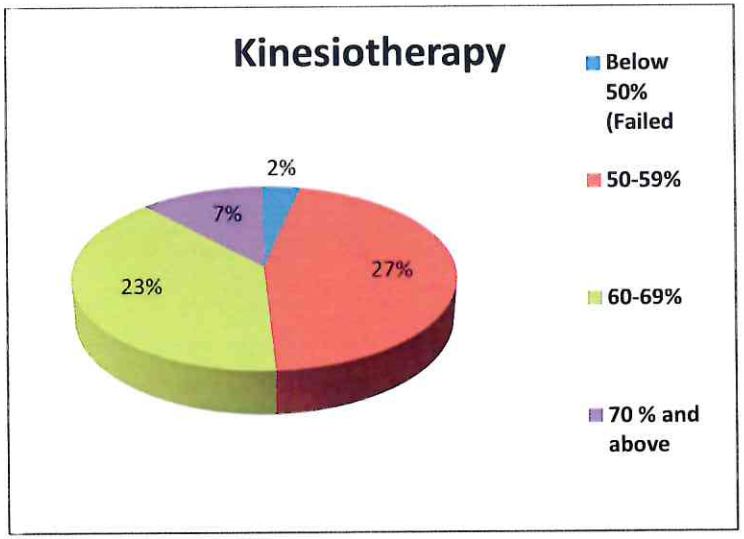

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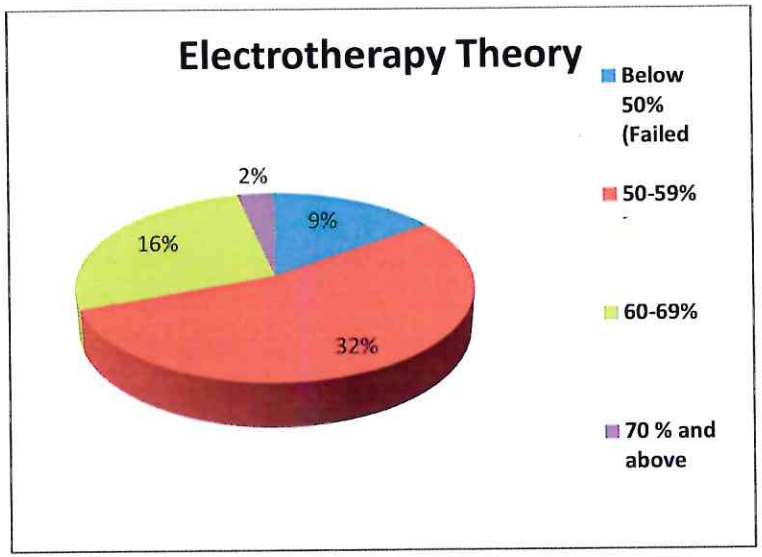

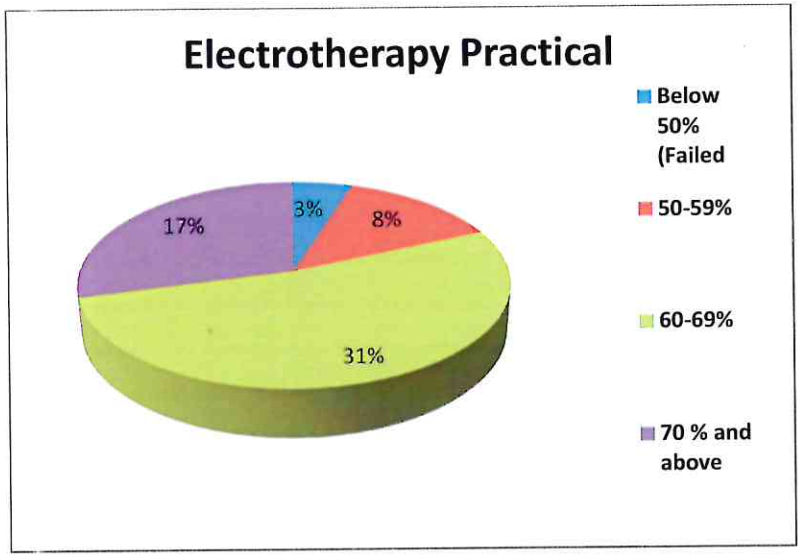

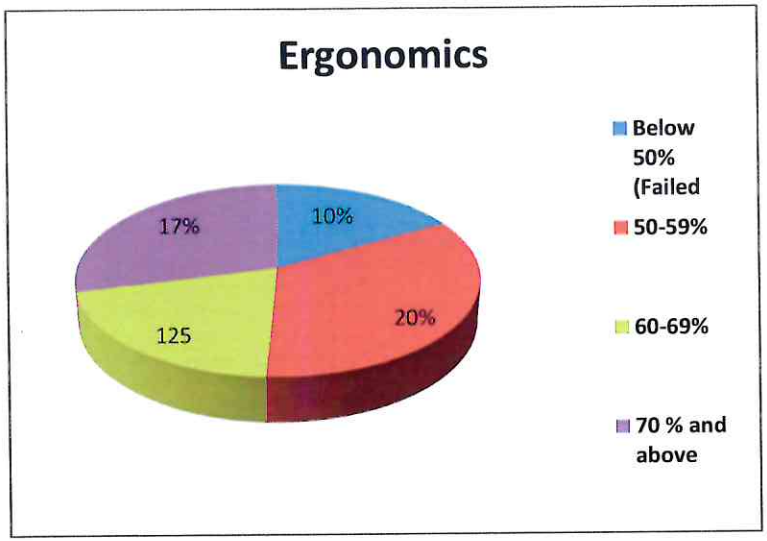

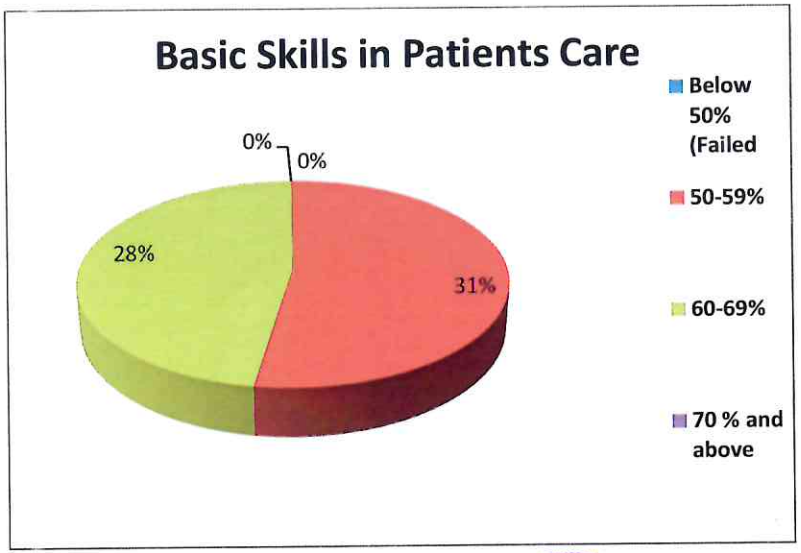

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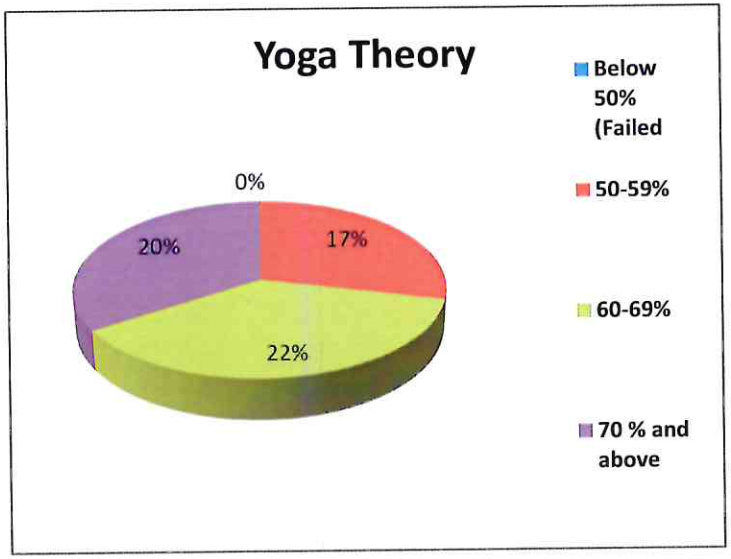

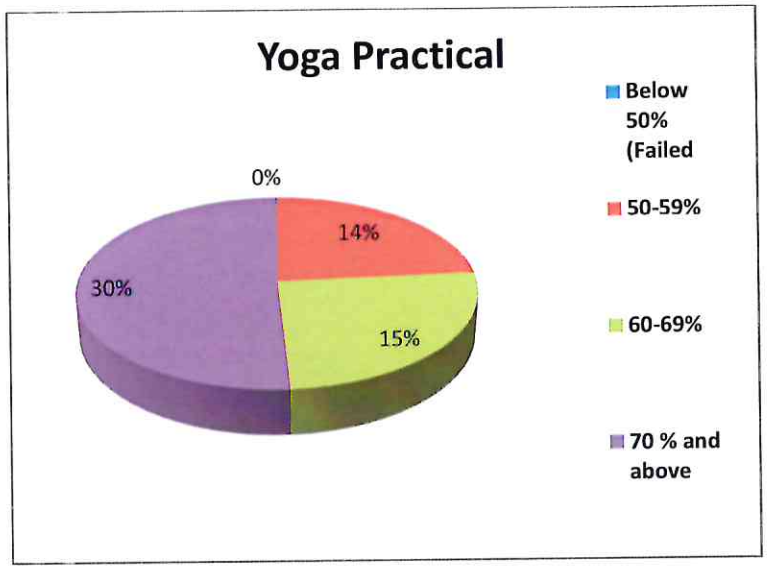

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III BPT Regular (2020-21)

SURGERY I			SURGERY II			MEDICINE I			MEDICINE II			COMMUNITY HEALTH			FDPS		
Level	No of students	%	Level	No of students	%	Level	No of students	%	Level	No of students	%	Level	No of students	%	Level	No of students	%
Below 50% (Failed)	3	5	Below 50% (Failed)	12	22	Below 50% (Failed)	6	10	Below 50% (Failed)	9	17	Below 50% (Failed)	6	10	Below 50% (Failed)	4	7
50-59%	20	37	50-59%	29	53	50-59%	41	68	50-59%	41	80	50-59%	45	76	50-59%	22	41
60-69%	26	49	60-69%	12	22	60-69%	8	13	60-69%	1	1	60-69%	8	13	60-69%	25	47
70 % and above	4	7	70 % and above	1	1	70 % and above	5	8	70 % and above	0	0	70 % and above	0	0	70 % and above	2	3

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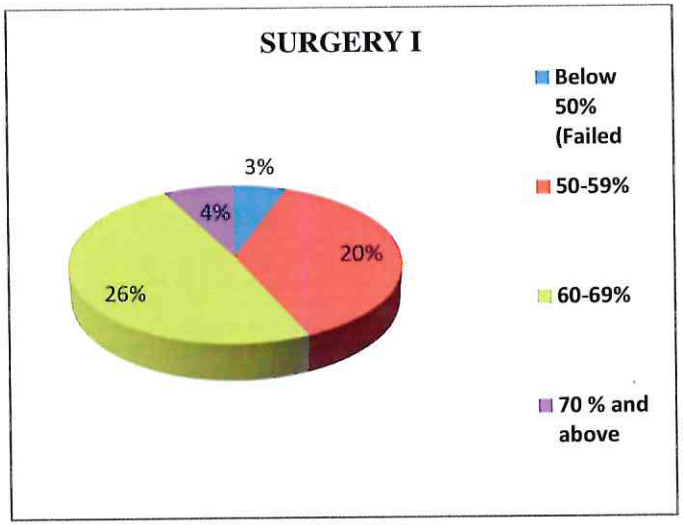

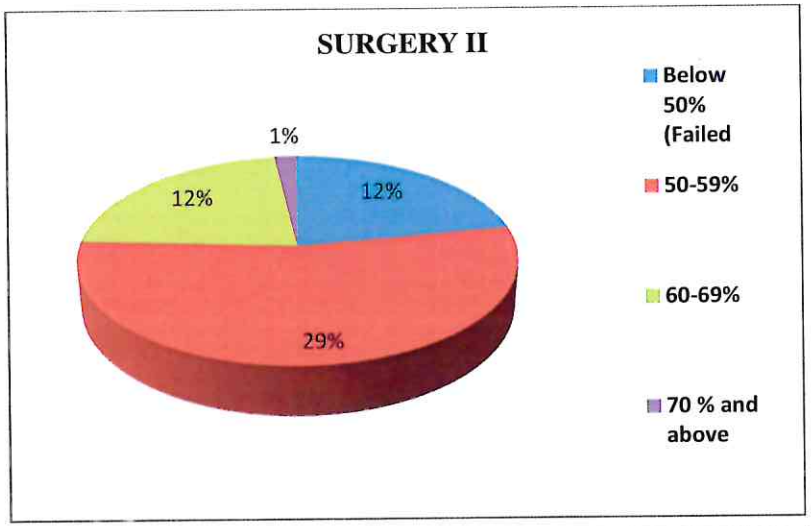

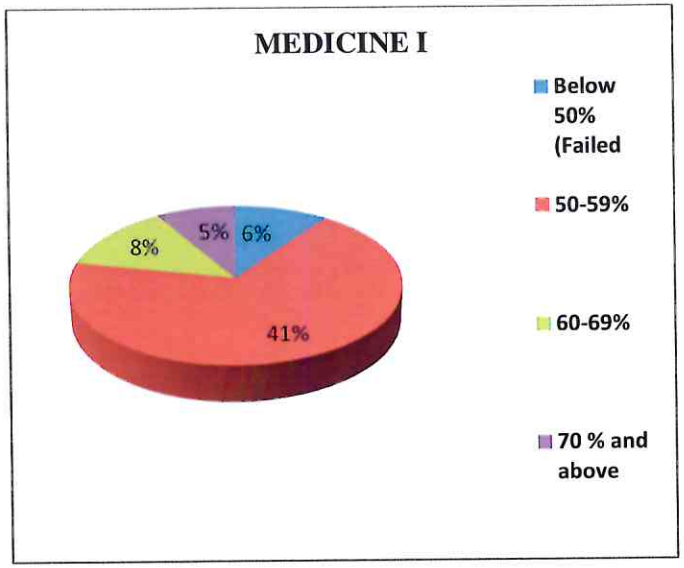

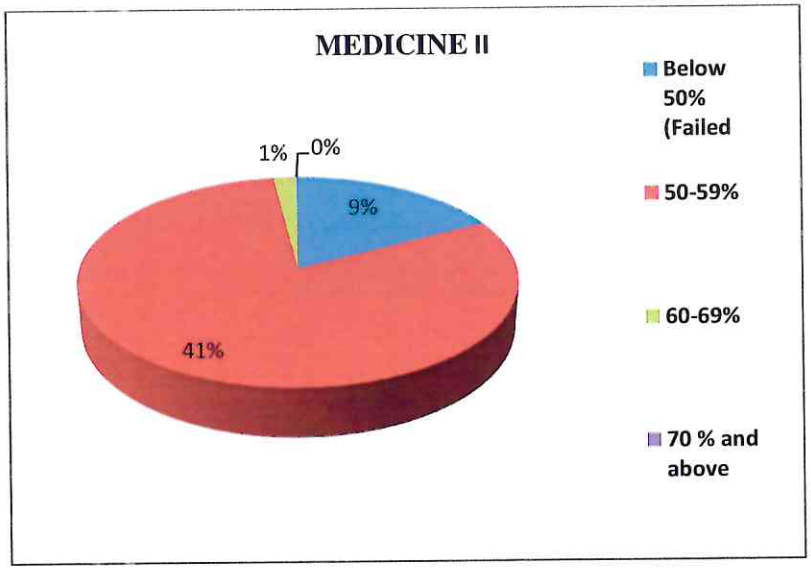

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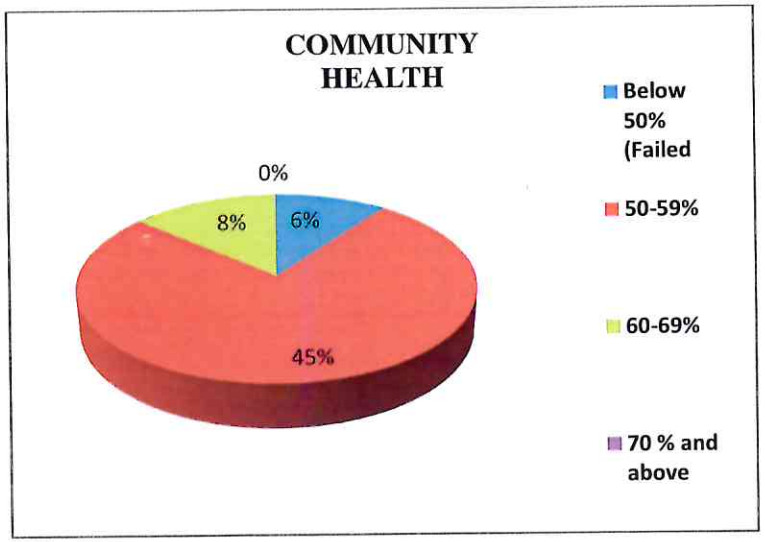

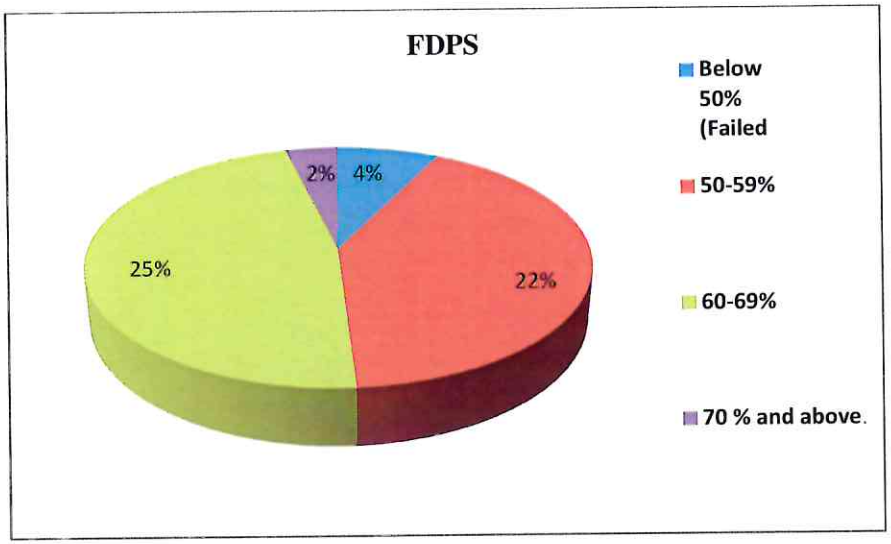

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IV BPT Regular batch (2020-21)

Musculoskeletal Physiotherapy			Neuro physiotherapy			Cardiovascular and Respiratory Physiotherapy			Community Physiotherapy		
Level	No of students	%	Level	No of students	%	Level	No of students	%	Level	No of students	%
Below 50% (Failed)	3	6	Below 50% (Failed)	1	2	Below 50% (Failed)	6	12	Below 50% (Failed)	1	2
50-59%	16	33	50-59%	3	6	50-59%	17	36	50-59%	10	20
60-69%	26	54	60-69%	27	57	60-69%	21	44	60-69%	31	63
70 % and above	3	6	70 % and above	16	34	70 % and above	3	6	70 % and above	7	14

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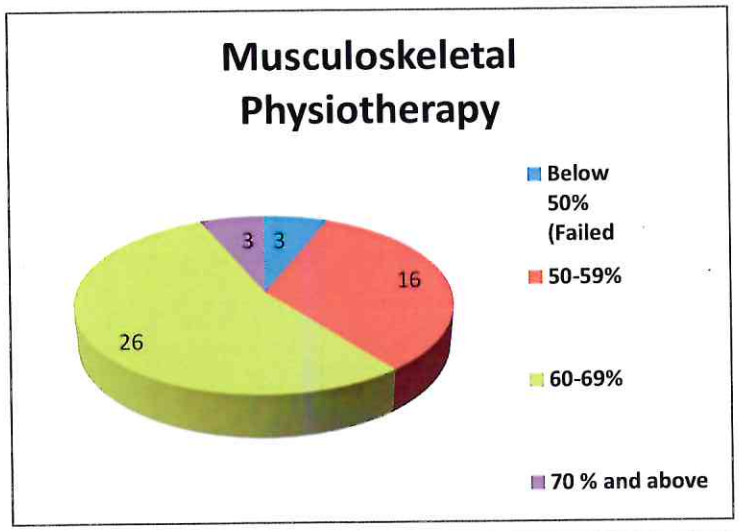

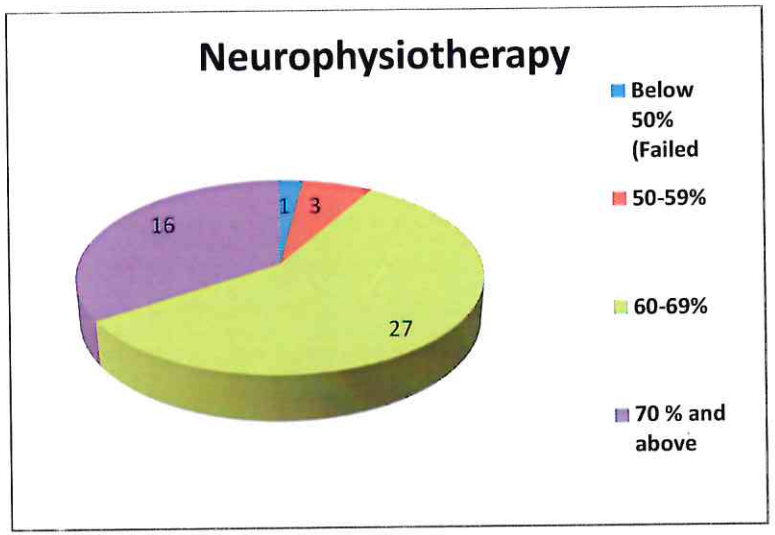

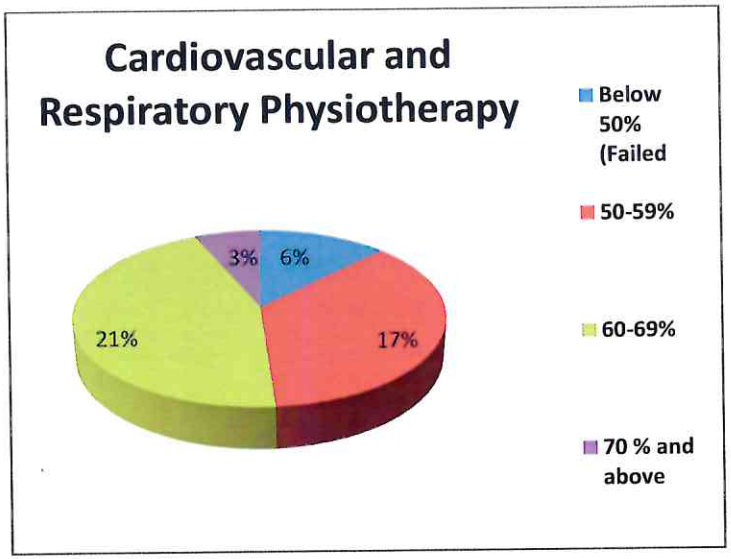

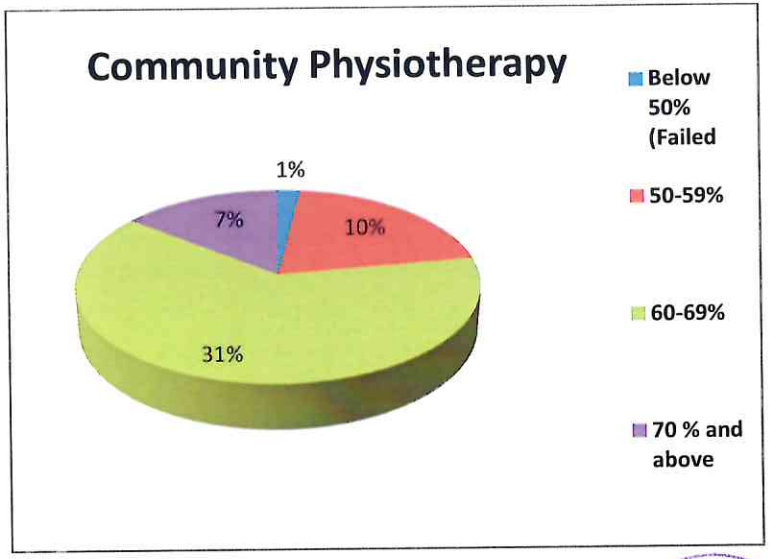

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POs, COs Mapping & Outcome Analysis.

CO PO MAPPING (Matrix)

Programe - First Year B.Sc

Semester - Smester I & II

PO1 – Knowledge & Skill Development- An ability to apply knowledge of healthcare technology (including clinical subjects, investigations/ Procedures, handling instruments)

PO2 – Critical Thinking – To apply professional judgment and rational thinking in decision-making

PO3 - Problem solving – Correlation of professional knowledge applied to current clinical or healthcare practices.

PO4 -Professional ethics – To adopt and apply code of ethics prescribed by professional bodies in professional and social context. Maintain appropriate boundaries with patients and care givers and maintain confidentiality.

PO5 – Communication skills – To communicate effectively with the patients, care givers and other healthcare professional for addressing patient related issues and to deliver and information

PO6 – Individual / Team work - ability to function on multi-disciplinary teams

PO 7- Holistic development: Development of intellectual mental, Physical, Emotional & Social abilities, so as to be capable of facing the demands & challenges of every day life.

PO8 – Lifelong learning - To develop continuous learning attitude in context of research, advances in clinical practices and to inculcate professionalism and evidence based practices

PO Mapping same with correlation level 3,2,1 The notation of 1 - low, 2 - moderate , 3 - high

				Knowledge & Skill Development	**Critical Thinking**	**Problem solving**	**Professional ethics**	**Communication skills**	**Individual / Team work**	**Holistic development**	**Lifelong learning**	**Average**
Semester	**Course / Course Code**	**Course Outecome**	**Details**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	
Semester 1	Human Anatomy- Part I	CO1	Define basic technical terminology and language associated with anatomy	2	1	2	0	0	1	0	1	0.7

		CO2	Identify and describe the gross anatomy and microscopic structures of various tissues and organs in the human body and correlate their structure with the functions as a prerequisite for understanding the altered state in various diseases	3	1	2	0	0	0	0	1	1.2
		CO3	Demonstrate and understand the anatomy of skeletal system, muscular system , joints , respiratory system ,circulatory system, digestive system and excretory system theoretically as well as in the dissected specimen	3	1	1	0	0	0	0	1	0.7
	Average			2.7	1.0	1.7	0.0	0.0	0.3	0.0	1.0	0.8
	Human Physiology Part I	CO1	Describe the basic physiological principles involved in the normal functioning of the human body & Apply the physiological principles in comprehending the	2	1	2	0	0	0	0	2	0.8

			pathophysiology of disease and its management									
		CO2	Describe & understand the functional aspects of general physiology,haematology, Cardiovascular system , digestive system, Respiratory system, nerve muscle physiology	3	1	3	0	0	0	0	2	1.1
		CO3	To be able to perform the tests or techniques to evaluate the functions of organ systems & efficient to handle the equipment related to these tests also to derive, analyse, interpret the test results.	2	1	3	0	0	0	0	2	1.1
	Average			1.4	0.6	1.6	0	0	0	0	1.2	0.6
	General Biochemistry & Nutrition	CO1	Understand the chemistry, metabolism and functions of biomolecules i.e. Carbohydrates, proteins, lipids,	3	2	2	0	0	0	2	3	1.5

			nucleic acids, enzymes and vitamins.									
		CO2	Gain knowledge about role of various essential aspects of Nutrition and Energy balance with its related disorders	3	1	1	0	0	0	2	3	1.3
		CO3	Know the fundamentals of techniques used in collection, processing and evaluation of biological specimens in pre-examination laboratory practices	2	1	2	2	1	1	2	3	1.8
	Average			6.67	3.33	3.67	0.67	0.33	0.33	4.67	7.00	3.3
	Introduction to National Health Care System (Multidisciplinary/Interdisciplinary)	CO1	The course provides the students a basic insight into the main features of Indian health care delivery system and how it compares with other systems of the world .	3	2	1	1	1	2	1	1	1.5
	Average			3	2	1	1	1	2	1	1	1.5
	English and Communication Skills	CO1	Able to express better	2	3	1	1	1	1	1	1	1.4
		CO2	Grow personally and professionally and develop confidence in every field	2	2	2	2	2	2	2	2	2.0

	Average			2	2.5	1.5	1.5	1.5	1.5	1.5	1.5	1.7
	Environmental Sciences	CO1	Understand and define terminology commonly used in enviromental sciences	2	2	2	2	2	2	2	2	2.0
		CO2	To understand the processes that govern the interactions with organism with the biotic and abiotic	2	2	1	1	2	2	2	1	1.6
		CO3	Understand the relatinship between people and the enviroment	2	2	1	2	2	2	2	2	1.9
	Average			2.0	2.0	1.3	1.7	2.0	2.0	2.0	1.7	1.8
Semester 2	Human Anatomy Part II	CO1	Define basic technical terminology and language associated with anatomy	2	1	2	0	0	0	0	2	0.9
		CO2	Identify and describe the gross anatomy and microscopic structures of various tissues and organs in the human body and correlate their structure with the functions as a prerequisite for understanding the altered state in various diseases	2	1	2	0	0	0	0	2	0.9

		CO3	Demonstrate and understand the anatomy of reproductive system,endocrine system ,nervous system ,sensory system, & lymphatic system theoretically as well as in the dissected specimen	2	1	2	0	0	0	0	2	0.9
	Average			2.0	1.0	2.0	0.0	0.0	0.0	0.0	2.0	0.9
	Human Physiology Part II	CO1	Describe the basic physiological principles involved in the normal functioning of the human body & Apply the physiological principles in comprehending the pathophysiology of disease and its management	2	1	1	2	1	2	1	2	1.5
		CO2	Describe & understand the functional aspects of nervous system , endocrine system,special senses, skin , Reproductive system,& excretory system.	2	1	2	0	0	0	0	2	0.9

		CO3	To be able to perform the tests or techniques to evaluate the functions of organ systems & efficient to handle the equipment related to these tests also to derive, analyse, interpret the test results.	2	1	2	0	0	0	0	2	0.9
	Average			2.0	1.0	1.7	0.7	0.3	0.7	0.3	2.0	1.1
	General Microbiology	CO1	Operate and use the light compound microscope and perform microbiological laboratory procedures according to appropriate safety standards .	3	2	2	0	0	0	0	2	1.1
		CO2	Demonstrate and interpret the findings of common laboratory techniques like various staining methods , wet mounts , peripheral smears for demonstration of microorganisms from various clinical specimens	3	1	2	0	0	0	0	2	1.0
	Average			3	1.5	2	0	0	0	0	2	1.1

	Basic Pathology & Hematology	CO1	Describe the rationale & principles of technical procedures of diagnostic laboratory tests and interpret diagnostic laboratory tests & correlate with clinical & morphological features of diseases.	2	1	2	0	0	0	0	1	0.8
		CO2	To aid haematology in the reference ranges for haemoglobin , haemocrit , erythrocytes and leukocytes in infants children and adults .	1	1	2	0	0	0	0	1	0.6
	Average			1.5	1	2	0	0	0	0	1	0.7
	Introduction to Quality and Patient safety	CO1	Student should be able to apply healthcare quality improvement and patient safety principles , concepts and methods at the micro- meso -, and macro - system levels	2	3	2	3	2	3	2	3	2.5
	Average			2	3	2	3	2	3	2	3	2.5
	Medical Bioethics & IPR	CO1	Student will be able to recognise what constitues an ethical concern in	3	3	0	2	2	3	2	2	2.1

			healthcare .Understand ethical issues in healthcare concern									
		CO2	Capacity to rationally justify your decisions and understand complexity and multi - dimensionality of medical ethical concerns and uniqueness of each problem and develop the ability to reason through difficult medical or clinical ethical issues	2	3	0	2	2	2	2	2	1.9
		CO3	Student gets awareness of acquiring and writing their own patent and copyright for their own innovative works and get the knowledge of plagarism in their innovations which can be questioned legally	3	3	0	2	2	2	3	3	2.3
	Average			2.7	3.0	0.0	2.0	2.0	2.3	2.3	2.3	2.1
	Human Rights & Professional Values/SEC 002L	CO1	Students acquire conceptual clarity and develop respect for norms and	3	2	0	2	0	1	2	1	1.4

			values of freedom , equality, fraternity and justice									
		CO2	Awareness of civil society organizations and movements promoting human rights	2	1	0	2	0	1	1	1	1.0
		CO3	Make the students realize the difference between values of human rights and their duties	2	2.5	0	2	0	1	1.5	1	1.3
	Average			2.3	1.8	0.0	2.0	0.0	1.0	1.5	1.0	1.2

MAPPING AVERAGE										
Semester	**Subject**	**PO1**	**P02**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	Average
Semester 1	Human Anatomy- Part I	2.7	1.0	1.7	0.0	0.0	0.3	0.0	1.0	0.8
	Human Physiology Part I	1.4	0.6	1.6	0	0	0	0	1.2	0.6
	General Biochemistry & Nutrition	6.80	3.33	3.70	0.70	0.33	0.33	4.70	7.00	3.4
	Introduction to National Health Care System (Multidisciplinary/Interdisciplinary)	3	2	1	1	1	2	1	1	1.5
	English and Communication Skills AEC 001L	2	2.5	1.5	1.5	1.5	1.5	1.5	1.5	1.7
	Environmental Sciences	2.0	2.0	1.3	1.7	2.0	2.0	2.0	1.7	1.8
Semester 2	Human Anatomy Part II	2.0	1.0	2.0	0.0	0.0	0.0	0.0	2.0	0.9
	Human Physiology Part II	2.0	1.0	1.7	0.7	0.3	0.7	0.3	2.0	1.1
	General Microbiology	3	1.5	2	0	0	0	0	2	1.1
	Basic Pathology & Hematology	1.5	1	2	0	0	0	0	1	0.7
	Introduction to Quality and Patient safety	2	3	2	3	2	3	2	3	2.5
	Medical Bioethics & IPR	2.3	3.0	0.7	2.3	2.0	2.3	2.3	2.7	2.2
	Human Rights & Professional Values	2.3	1.8	0.0	2.0	0.0	1.0	1.5	1.0	1.2

CO & PO Relationships (Mapping Strength)															
Programe - First Year B.Sc															
Semester - Smester III, IV, V & VI															
				CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
Semester	Course & Course code	CO	CO Detail	PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 1	Human Anatomy - Part I	CO1	Define basic technical terminology and language associated with anatomy	PO1 ,PO2,PO3 ,PO5, PO8	C.A.P	1unit	5	0	2	0	0		7	7	Level -1
		CO2	Identify and describe the gross anatomy and microscopic structures of various tissues and organs in the human body and correlate their structure with the functions as a prerequisite for understanding the altered state in various diseases	PO1 ,PO2,PO3 ,PO5, PO8	C.A.P	2,3,4,5 ,6,7,8	40	1	24	1	0		64	61	Level -3
		CO3	Understand and demonstrate the anatomy of Respiratory system , Circulatory system , Digestive system and Excretory system with it's clinical application	PO1 ,PO2,PO3 ,PO5, PO8	C.A.P	2,3,4,5 ,6,7,8	40	1	30	1	0		70	67	Level -3
	Average						58	1	36	1			94	90	Level -3
		CO1	Describe physiological basic principles involved in normal funtioning of the human body	PO1, PO2 , PO3 ,	C.A.P	1,2,3,4 ,5,6	45	100	60	100			105	100	Level - 3

	Human Physiology Part I		**and apply the physiological principles in comprehending the pathophysiology of the disease and it's management.**	**PO4,PO5,PO6,PO8**											
		CO2	**To understand the basic mechanism operating and regulatory mechanism of each organ systems .**	**PO1, PO2 , PO3 , PO4,PO5,PO6,PO8**	**C.A.P**	**2,3,4,5,6**	**43**	**96**		**0**	**0**		**43**	**41**	**Level -2**
		CO3	**To be able to perform the tests or techniques to evaluate the funtioning of organ systems and to be efficient to handle the equipment related to these tests, derive analyse and interpret the results as normal and abnormal .**	**PO1, PO2 , PO3 , PO4,PO5,PO6,PO8**	**C.A.P**	**1,2,3,4,5,6**	**45**	**100**	**60**	**100**	**0**		**105**	**100**	**Level - 3**
	Average						**103**	**229**	**80**	**133**	**0**		**183**	**174**	**Level -3**
	General Biochemistry & Nutrition	**CO1**	**Understand the chemistry, metabolism and functions of biomolecules i.e. Carbohydrates, proteins, lipids, nucleic acids, enzymes and vitamins.**	**PO1, PO2 , PO3 ,PO7, PO8**	**C.P**	**1,2,3,4,5**	**40**	**67**	**35**	**58**	**0**		**75**	**63**	**Level - 3**
		CO2	**Gain knowledge about role of various essential aspects of Nutrition and Energy balance with its related disorders**	**PO1, PO2 , PO3 ,PO7, PO8**	**C.A.P**	**6, 9**	**10**	**17**	**5**	**8**			**15**	**13**	**Level - 1**
		CO3	**Know the fundamentals of techniques used in collection, processing and evaluation of biological specimens in pre-examination laboratory practices**	**PO1, PO2 , PO3 , PO4, PO5, PO6, PO8**	**C.A.P**	**7, 8**	**10**	**17**	**30**	**50**			**40**	**33**	**Level - 2**
	Average						**60**	**100**	**60**	**100**			**120**	**100**	**Level -3**

	Introduction to National Health Care System (Multidisciplinary/ Interdisciplinary)	**CO1**	**The course provides the students a basic insight into the main features of Indian health care delivery system and how it compares with other systems of the world .**	**PO1, PO2 , PO3 , PO4,PO5,PO6,PO8**	**C.A.P**	**1,2,3,4,5,6**	**45**	**100**		**0**			**45**	**100**	**Level 3**
	Average						**45**	**100**		**0**			**45**	**100**	
	English and Communication Skills AEC 001L	**CO1**	**Able to express better**	**PO1 ,PO2,PO3 ,PO4, PO5,PO6,PO7, PO8**	**C .A.P**	**1,2,3,4,5,6,7,8,9,10**	**45**	**100**		**0**			**45**	**100**	**Level 3**
		CO2	**Grow personally and professionally and develop confidence in every field**	**PO1 ,PO2,PO3 ,PO4, PO5,PO6,PO7, PO8**	**C.A.P**	**3,4,5,6,7,8,9,10**	**33**	**73**		**0**			**33**	**73**	**Level 3**
	Average						**62**	**137**		**0**			**62**	**137**	**Level 3**
	Environmental Sciences/ AEC 002L	**CO1**	**Understand and define terminology commonly used in enviromental sciences**	**PO1 ,PO2,PO3 ,PO4, PO5,PO6,PO7, PO8**	**C .A.P**	**1,2,3,4,5,6**	**45**	**100**		**0**			**45**	**100**	**Level 2**
		CO2	**To understand the processes that govern the interactions with organism with the biotic and abiotic**	**PO1 ,PO2,PO3 ,PO4, PO5,PO6,PO7, PO8**	**C .A.P**	**1,2,3,4,5,6**	**45**	**100**		**0**			**45**	**100**	**Level 2**
		CO3	**Understand the relatinship between people and the enviroment**	**PO1 ,PO2,PO3 ,PO4,**	**C .A.P**	**1,2,3,4,5,6**	**45**	**100**		**0**			**45**	**100**	**Level 2**

				PO5,PO6,PO 7, PO8											
	Average						45	100		0			45	43	
Semester 2	Human Anatomy Part II	CO1	Define basic technical terminology and language associated with anatomy	PO1 ,PO2,PO3 ,PO4, PO5,PO6,PO 7,PO8	C.A. P	1,2,3,4 ,5	30	100	60	100	0		90	100	Level -3
		CO2	Identify and describe the gross anatomy and microscopic structures of various tissues and organs in the human body and correlate their structure with the functions as a prerequisite for understanding the altered state in various diseases	PO1 ,PO2,PO3 , PO5,PO6,PO 8	C.A. P	1,2,3,4 ,5	30	100	60	100	0		90	100	Level -3
		CO3	Understand and demonstrate the anatomy of reproductive system,endocrine system ,nervous system ,sensory system, & lymphatic system with its applied aspects.	PO1 ,PO2,PO3 , PO5,PO6,PO 8	C.A. P	1,2,3,4 ,5	30	100	60	100	0		90	100	Level - 3
	Average						30	100	60	100	0		60	67	Level -3
	Human Physiology Part II	CO1	Describe physiological basic principles involved in normal funtioning of the human body and apply the physiological principles in comprehending the pathophysiology of the disease and it's management.	PO1 ,PO2,PO3 , PO5,PO6,PO 8	C.A	1,2,3,4 ,5,6	30	100	16	53			46	77	Level -3

		CO2	To understand the basic mechanism operating and regulatory mechanism of each organ systems .	PO1 ,PO2,PO3 , PO5,PO6,PO 8	C.A	1,2,3,4 ,5,6	30	100	8	27			38	63	Level -3
		CO3	To be able to perform the tests or techniques to evaluate the funtionins of organ systems and to be efficient to handle the equipment related to these tests, derive analyse and interpret the results as normal and abnormal .	PO1 ,PO2,PO3 , PO5,PO6,PO 8	C.A .P	1,2,3,4 ,5,6	30	100	6	20			36	60	Level -3
	Average						70	233	10	33	0		80	133	Level -3
	General Microbiol ogy/BML T 108 L	CO1	To demonstrate knowledge of microoganisms and disease caused , as well as to perform microbiological laboratory procedures .	PO1 ,PO2,PO3 , PO5,PO6,PO 8	C.A. P	1,2,3,4 ,5,6,7, 8,9	45	100	36	60	0		81	77	Level - 3
		CO2	To have basic knowledge about serology and immunology	PO1 ,PO2,PO3 , PO5,PO6,PO 8	C.P	5	6	13	8	13	0		14	13	Level - 1
		CO3	Demostrate basic knowledge and practise of infection ,control and safety precaution while working in hospital / laboratory .	PO1 ,PO2,PO3 , PO5,PO6,PO 8	C.A. P	3,4	8	18	16	27	0		24	23	Level - 1
	Average						20	57	20	33	0	16	40	38	Level - 2
	Basic Patholog y & Hematolo	CO1	The student should have basic knowledge hematology and cytology and clinical pathology .	PO1 ,PO2,PO3 ,PO4,	C	1,2,3,4 ,5,6,7, 8,9,10, 11,12	60	100	0		0		60	100	Level - 3

	gy/BMLT 109 L			PO5,PO6,PO 7,PO8											
		CO2	Student should knowparts,basic functions and operation of microscope . Interpret diagnostic laboratory results and corelate it with sign and symptoms of patients.	PO1 ,PO2,PO3 , PO5,PO6,PO 8	C.A. P	1,2,3,4 ,5,6,7, 8,9,10, 11,12	60	100	0		0		60	100	Level - 3
	Average						60	100					60	100	Level - 3
	Introduct ion to Quality and Patient safety/B MLT 110 L	CO1	To apply healthcare quality improvement and patient safety principles ,concepts , and methods at the micro - meso- and macrosystem level	PO1 ,PO2,PO3 , PO5,PO6,PO 8	C.A.	1,2,3,4 ,5,6	45	100	0	0	0	0	45	100	Level -3
	Average						45	100				18	45	100	Level -3
	Medical Bioethics & IPR/SEC 001L	CO1	Student will be able to recognise what constitues an ethical concern in healthcare .Understand ethical issues in healthcare concern	PO1 ,PO2,PO3 ,PO4, PO5,PO6,PO 7,PO8	C.A. P	1,2,3,4 ,5,6	45	100	0	0	0	0	45	100	Level -3
		CO2	Capacity to rationally justify your decisions and understand complexity and multi - dimensionality of medical ethical concerns and uniqueness of each problem and develop the ability to reason through difficult medical or clinical ethical issues	PO1 ,PO2,PO3 ,PO4, PO5,PO6,PO 7,PO8	C.A. P	1,2,3,4 ,5,6	45	100	0	0	0	0	45	100	Level -3

		CO3	Student gets awareness of acquiring and writing their own patent and copyright for their own innovative works and get the knowledge of plagarism in their innovations which can be questioned legally	PO1 ,PO2,PO3 ,PO4, PO5,PO6,PO 7,PO8	C.A. P	1,2,3,4 ,5,6	45	100	0	0	0	0	45	100	Level -3
	Average						45	100				18	45	100	Level -3
	Human Rights & Professio nal Values/S EC 002L	CO1	Students acquire conceptual clarity and develop respect for norms and values of freedom , equality, fraternity and justice	PO1 ,PO2,PO3 ,PO4, PO5,PO6,PO 7,PO8	C.A. P	1,2,3,4 ,5,6,7	45	100	0	0	0	0	45	100	Level -3
		CO2	Awareness of civil society organizations and movements promoting human rights	PO1 ,PO2,PO3 ,PO4, PO5,PO6,PO 7,PO8	C.A. P	1,2,3,4 ,5,6,7	45	100	0	0	0	0	45	100	Level -3
		CO3	Make the students realize the difference between values of human rights and their duties	PO1 ,PO2,PO3 ,PO4, PO5,PO6,PO 7,PO8	C.A. P	1,2,3,4 ,5,6,7	45	100	0	0	0	0	45	100	Level -3
	Average						45	100	0	0	0	18	45	100	Level -3

CO PO MAPPING (Matrix)

Programe - Bsc Medical Lab Technology

Semester - Smester III, IV, V & VI

PO1 – Knowledge & Skill Development- An ability to apply knowledge of healthcare technology (including clinical subjects, investigations/ Procedures, handling instruments)

PO2 – Critical Thinking – To apply professional judgment and rational thinking in decision-making

PO3 - Problem solving – Correlation of professional knowledge applied to current clinical or healthcare practices.

PO4 -Professional ethics – To adopt and apply code of ethics prescribed by professional bodies in professional and social context. Maintain appropriate boundaries with patients and care givers and maintain c

PO5 – Communication skills – To communicate effectively with the patients, care givers and other healthcare professional for addressing patient related issues and to deliver and information

PO6 – Individual / Team work - ability to function on multi-disciplinary teams

PO 7- Holistic development: Development of intellectual mental, Physical, Emotional & Social abilities, so as to be capable of facing the demands & challenges of every day life.

PO8 – Lifelong learning - To develop continuous learning attitude in context of research, advances in clinical practices and to inculcate professionalism and evidence based practices

PO Mapping same with correlation level 3,2,1 The notation of 1 - low, 2 - moderate , 3 - high

Semester	Course / Course Code	Course Outcome	CO Detail	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 3	Fundamental of Biochemistry - I/BMLT 112L	CO1	At the end of semester students shall be able to develop expiremental & analytical skills.	3	3	3	3	3	3	3	3	3.0
	Average			3	3	3	3	3	3	3	3	3.0
	Fundamentals of Microbiology- I/BMLT 113 L	CO1	student with the study of normal flora andpathogenic microorganisms. Methods for recovery, identification of pathogens, culture techniques, procedures, and antibiotic testing and sterilization techniques.	3	3	3	3	3	3	3	3	3.0
		CO2	Get an idea of universal safety	3	3	3	3	3	3	3	3	3.0
	Average			3	3	3	3	3	3	3	3	3.0
	Hematology and Clinical Pathology - I/BMLT 114 L	CO1	At the end of the semester the student should be know the basic concepts in hematology and clinical pathology	3	3	3	3	3	3	3	2	2.9
		CO2	He should be able to collect blood under	3	3	3	3	3	3	3	3	3.0
		CO3	Should perform urine experiments under guidance	3	3	3	3	3	3	3	3	3.0
	Average			3	3	3	3	3	3	3	2.7	3.0
		CO1	more decisive and develop intuitive ability for their study and career related matter.	1	1	1.5	1	1.5	0.5	1.5	1	1.1
		CO2	Student's ability to present their ideas will be developed.	1	1	1.5	1	1.5	0.5	1	1	1.1
		CO3	speaking & improved Presentation ability.	1	1	1	1	1.5	1	1.5	1	1.1

Semester	Course / Course Code	Course Outcome	CO Detail	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 3	Pursuit of Inner Self Excellence (POIS)/GEC 001L	CO4	inner potential and inner ability to become a successful researcher or technician & hence become more focused.	1	1	1.5	1	1	1.5	1	1	1.1
		CO5	Students will observe significant reduction in stress level.	1	1	1	1	1	1.5	1	1.5	1.1
		CO6	attributes like Empathy, Compassion, Service, Love & brotherhood, students will serve the society and industry in better way with teamwork and thus grow professionally.	1	1	1.5	1	1	1	1	1.5	1.1
	Average			1.0	1.0	1.3	1.0	1.3	1.0	1.2	1.2	1.1
	Organizational Behavior/GEC 002L	CO1	to team and organizational scenarios in order achieve a team's or an organization's goals and objectives.	1	1	1.5	2	1	1.5	1	1	1.3
		CO2	Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviors in team and organizational settings.	1	1	1.5	2	1	1	1	1	1.2
		CO3	development, team effectiveness, and group decision making models and techniques. Analyse and apply leadership theories and better understand their own leadership style.	1	1	1.5	1.5	1	1.5	1	1	1.2
	Average			1.0	1.0	1.5	1.8	1.0	1.3	1.0	1.0	1.2
Semester 4	Fundamental of Biochemistry - II/BMLT 116 L	CO1	At the end of semester students shall be able to get knowledge about quality Management System in Clinical biochemistry Laboratory	3	3	3	3	3	3	3	3	3.0
	Average			3	3	3	3	3	3	3	3	3.0
	Fundamentals of Microbiology- II/BMLT 117 L	CO1	This part is designed to study the details of systemic bacteriology including its morphology, species, lab diagnosis, isolation and identification.	3	3	3	3	3	3	3	3	3.0
		CO2	The knowledge of related diseases with its brief clinical features will be gained.	3	3	3	3	3	3	3	3	3.0
	Average			3	3	3	3	3	3	3	3	3.0
	Hematology and Clinical Pathology - II/BMLT 118 L	CO1	Students will have knowledge about various glassware, equipments.	3	3	3	3	3	3	3	3	3.0
		CO2	Students will be able to prepare percent, normal, molar solutions	3	3	3	3	3	3	3	3	3.0
		CO3	Analytical skill for examination of body fluids, blood pH and electrolytes.	3	3	3	3	3	3	3	3	3.0

Semester	Course / Course Code	Course Outcome	CO Detail	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
	Average			3	3	3	3	3	3	3	3	3.0
	Computer and Applications/AEC 003 L	CO1	different IT applications in allied health care.	1	1.5	1	1.5	1	2	1	1	1.1
		CO2	Explain the function of Hospital Information Systems	1	2	1.5	1.5	1	1.5	1	1	1.2
Semester 4		CO3	Analyze medical standards	1	1.5	1.5	2	1	1.5	1	1	1.2
	Average			1.0	1.7	1.3	1.7	1.0	1.7	1.0	1.0	1.2
	Biostatistics and Research Methodology/AEC 004 L	CO1	To understand the importance & Methodology for research	2.5	1.5	2	2	2.5	2	3	3	2.0
		CO2	To learn in detail about sampling, probability and sampling distribution, significance tests correlation and regression, sample size determination, study design and multivariate analysis.	2	2	2	2	2.5	3	3	2	2.1
	Average			2.25	1.75	2	2	2.5	2.5	3	2.5	2.0
	Clinical Biochemistry - I/BMLT 120 L	CO1	At the end of semester students shall be able to develop technical Skills to perform various diagnostic profiles to operate Lab Information System & to report independently	3	3	3	3	3	3	3	3	3.0
	Average			3	3	3	3	3	3	3	3	3.0
	Medical Microbiology- I/BMLT 121 L	CO1	student with an introduction to basiclaboratory identification and classification of medically significant isolates in mycology, parasitology.	3	3	3	3	3	3	3	3	3.0
		CO2	Laboratory safety, specimen selection and processing, isolation methods, immunologic diagnosis and treatment.	3	3	3	3	3	3	3	3	3.0
		CO3	mycosis, parasitic and infections are explored	3	3	3	3	3	3	3	3	3.0
	Average			3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Semester 5	Blood Bank and General Pathology - I/BMLT 122L	CO1	basic knowledge of hematology, histopathology, and cytology in laboratory	3	3	3	3	3	3	3	3	3.0
		CO2	The student should perform the techniques and staining procedure in histopathology and cytology	3	3	3	3	3	3	3	3	3.0
		CO3	basics of hematology and clinical pathology learnt in 3rd and 4th semester in clinical laboratory.	3	3	3	3	3	3	3	3	3.0
	Average			3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Semester	Course / Course Code	Course Outcome	CO Detail	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
	Basics of Clinical Skill Learning/CEC 005 L	CO1	After successful accomplishment of the course, the students would be able to Measure Vital Signs, do basic physical Examination of the patients, NG tube basics, Administration of Medicines	1.5	2	2	2	1.5	2	2	2	1.9
		CO2	The students will learn about Asepsis, and the Cleanliness related to asepsis and on mobility of the patients	3	2	2	2	1.5	2	2	2	2.1
	Average			2.3	2.0	2.0	2.0	1.5	2.0	2.0	2.0	2.0
Semester 5	Hospital Operation Management/CEC 006 L	CO1	management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors	1	1	1.5	1	1	1	1	2	1.2
		CO2	their leadership and teambuilding abilities	2	1	1.5	1	1	1	1	2	1.3
		CO3	Apply modern change management and innovation management concepts to optimize structures	1	1	1.5	1	2	1	1	2	1.3
		CO4	Analyze existing hospital service policies and enhance their alignment within the local and national context	1	1	1.5	1	2	1	1	2	1.3
	Average			1.3	1.0	1.5	1.0	1.5	1.0	1.0	2.0	1.3
Semester 6	Clinical Biochemistry - II/BMLT 124 L	CO1	At the end of semester students shall be able to Work as a Laboratory Technician in Hospital Laboratories, Pharmaceutical industries & in Research institute	3	3	3	3	3	3	3	3	3.0
	Average			3	3	3	3	3	3	3	3	3.0
	Medical Microbiology- II/BMLT 125L	CO1	The main aim of this course is to train stu	3	3	3	3	3	3	3	3	3.0
		CO2	Theoretical as well as practical training is	3	3	3	3	3	3	3	3	3.0
		CO3	They are introduced to basic and advance	3	3	3	3	3	3	3	3	3.0
	Average			3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Blood Bank and General Pathology -	CO1	The student be well versed with the techn	3	3	3	3	3	3	3	3	3.0
		CO2	The B.Sc graduate should have sound kn	3	3	3	3	3	3	3	3	3.0
	Average			3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Semester	Course / Course Code	Course Outcome	CO Detail	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development
				PO1	P02	PO3	PO4	PO5	PO6	PO7
MAPPING AVERAGE										
Semester	**Subject**	**PO1**	**P02**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	Average
Semester 3	Fundamental of Biochemistry - I/BMLT 112L	3	3	3	3	3	3	3	3	3
	Fundamentals of Microbiology-I/BMLT 113 L	3	3	3	3	3	3	3	3	3
	Hematology and Clinical Pathology - I/BMLT 114 L	3	3	3	3	3	3	3	3	3
	Pursuit of Inner Self Excellence (POIS)/GEC 001L	1	1	1.3	1	1.3	1	1.2	1.2	1
	Organizational Behavior/GEC 002L	1	1	1.5	1.8	1	1.3	1	1	1
Semester 4	Fundamental of Biochemistry - II/BMLT 116 L	3	3	3	3	3	3	3	3	3
	Fundamentals of Microbiology-II/BMLT 117 L	3	3	3	3	3	3	3	3	3
	Hematology and Clinical Pathology - II/BMLT 118 L	3	3	3	3	3	3	3	3	3
	Computer and Applications/AEC 003 L	1	1.7	1.3	1.7	1	1.7	1	1	1
	Biostatistics and Research Methodology/AEC 004 L	2.25	1.75	2	2	2.5	2.5	3	2.5	2
Semester 5	Clinical Biochemistry - I/BMLT 120 L	3	3	3	3	3	3	3	3	3
	Medical Microbiology-I/BMLT 121 L	3	3	3	3	3	3	3	3	3
	Blood Bank and General Pathology - I/BMLT 122L	3	3	3	3	3	3	3	3	3
	Basics of Clinical Skill Learning/CEC 005 L	2.3	2	2	2	1.5	2	2	2	2
	Hospital Operation Management/CEC 006 L	1.3	1	1.5	1	1.5	1	1	2	1
Semester 6	Clinical Biochemistry - II/BMLT 124 L	3	3	3	3	3	3	3	3	3
	Medical Microbiology-II/BMLT 125L	3	3	3	3	3	3	3	3	3
	Blood Bank and General Pathology - II/BMLT 126 L	3	3	3	3	3	3	3	3	3

CO & PO Relationships (Mapping Strength)

Programe - Bsc Medical Lab Technology

Semester - Smester III, IV, V & VI

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 3	Fundamental of Biochemistry - I/BMLT 112L	CO1	At the end of semester students shall be able to develop expiremental & analytical skills.	PO1-PO8	C,A,P	1,2,3,4	30	100%	15	15%	15	50%	60	100%	3
		Total					30	100%	15	50%	15	50%	60	100%	3
	Fundamentals of Microbiology- I/BMLT 113 L	CO1	Theory and Lab courses provide the student with the study of normal flora andpathogenic microorganisms. Methods for recovery, identification of pathogens, culture techniques, procedures, and antibiotic testing and sterilization techniques.	PO1-PO8	C,A,P	1,2,3,4,6	42	93%	7	9%	8	27%	57	76%	3
		CO2	Get an idea of universal safety precautions.	PO1-PO8	C,A,P	5	3	7%	8	11%	7	23%	18	24%	2
		Total					45	100%	15	20%	15	50%	75	100%	3
	Hematology and Clinical Pathology - I/BMLT 114 L	CO1	At the end of the semester the student should be know the basic concepts in hematology and clinical pathology	PO1-PO8	C,A,P	1,2,3,4,6	34	76%	7.5	10%	7.5	25%	49	65%	3
		CO2	He should be able to collect blood under guidance	PO1-PO8	C,A,P	1	8	18%	5	7%	5	17%	18	24%	2
		CO3	Should perform urine experiments under guidance	PO1-PO8	C,A,P	4	3	7%	2.5	3%	2.5	8%	8	11%	1
		Total					45	100%	15	20%	15	50%	75	100%	3
	Pursuit of Inner Self Excellence (POIS)/GEC 001L	CO1	Students will become self dependent, more decisive and develop intuitive ability for their study and career related matter.	PO1-PO8	C,A	1,2	8	18%					8	18%	1
		CO2	Student's ability to present their ideas will be developed.	PO1-PO8	C,A	2,4	7	16%					7	16%	1
		CO3	Enhanced communication skills, public speaking & improved Presentation ability.	PO1-PO8	C,A	1	5	11%					5	11%	1
		CO4	Students will be able to explore their inner potential and inner ability to become a successful researcher or technician & hence become more focused.	PO1-PO8	C,A	1,3	15	33%					15	33%	2
		CO5	Students will observe significant reduction in stress level.	PO1-PO8	C,A	1	5	11%					5	11%	1
		CO6	With the development of personal attributes like Empathy, Compassion, Service, Love & brotherhood, students will serve the society and industry in better way with teamwork and thus grow professionally.	PO1-PO8	C,A	4	5	11%					5	11%	1
		Total					45	100%					45	100%	3
		CO1	Describe and apply motivation theories to team and organizational scenarios in order achieve a team's or an organization's goals and objectives.	PO1-PO8	C,A	1,3,4	18	40%					18	40%	2
		CO2	Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviors in team and organizational settings.	PO1-PO8	C,A	2,5	14	31%					14	31%	2

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 3	Organizational Behavior/GEC 002L	CO3	Explain types of teams and apply team development, team effectiveness, and group decision making models and techniques. Analyse and apply leadership theories and better understand their own leadership style.	PO1-PO8	C,A	6,7	13	29%					13	29%	1
		Total					45	100%					45	100%	3
Semester 4	Fundamental of Biochemistry - II/BMLT 116 L	CO1	At the end of semester students shall be able to get knowledge about quality Management System in Clinical biochemistry Laboratory	PO1-PO8	C,A,P	1,2,3,4	30	67%	15	50%	15	50%	60	100%	3
		Total					30	67%	15	50%	15	50%	60	100%	3
	Fundamentals of Microbiology- II/BMLT 117 L	CO1	This part is designed to study the details of systemic bacteriology including its morphology, species, lab diagnosis, isolation and identification.	PO1-PO8	C,A,P	1 to 14	25	56%	7	23%	7	23%	39	52%	3
		CO2	The knowledge of related diseases with its brief clinical features will be gained.	PO1-PO8	C,A,P	1 to 14	20	44%	8	27%	8	27%	36	48%	2
		Total					45	100%	15	50%	15	50%	75	100%	3
	Hematology and Clinical Pathology - II/BMLT 118 L	CO1	Students will have knowledge about various glassware, equipments.	PO1-PO8	C,A,P	1,2,3,4,6	34	76%	7.5	25%	7.5	25%	49	65%	3
		CO2	Students will be able to prepare percent, normal, molar solutions	PO1-PO8	C,A,P	1	8	18%	5	17%	5	17%	18	24%	2
		CO3	Analytical skill for examination of body fluids, blood pH and electrolytes.	PO1-PO8	C,A,P	4	3	7%	2.5	8%	2.5	8%	8	11%	1
		Total					45	100%	15	50%	15	50%	75	100%	3
	Computer and Applications/AEC 003 L	CO1	Discuss about health informatics and different IT applications in allied health care.	PO1-PO8	C,A	1,2,3,4,5	16	36%					16	36%	2
		CO2	Explain the function of Hospital Information Systems	PO1-PO8	C,A	6,7,8	15	33%					15	33%	2
		CO3	Analyze medical standards	PO1-PO8	C,A	9,10,11,12	14	31%					14	31%	2
		Total					45	100%					45	100%	3
	Biostatistics and Research Methodology/AEC 004 L	CO1	To understand the importance & Methodology for research	PO1-PO8	C,A	1,2,3	15	33%					15	33%	2
		CO2	To learn in detail about sampling, probability and sampling distribution, significance tests correlation and regression, sample size determination, study design and multivariate analysis.	PO1-PO8	C,A	4,5,6,7,8,9	30	67%					30	67%	3
		Total					45	100%					45	100%	3
Semester 5	Clinical Biochemistry - I/BMLT 120 L	CO1	At the end of semester students shall be able to develop technical Skills to perform various diagnostic profiles to operate Lab Information System & to report independently	PO1-PO8	C,A,P	1,2,3,4,5	30	67%	15	50%	15	50%	60	100%	3
		Total					30	67%	15	50%	15	50%	60	100%	3
	Medical Microbiology- I/BMLT 121 L	CO1	Theory and Lab courses provide the student with an introduction to basiclaboratory identification and classification of medically significant isolates in mycology, parasitology.	PO1-PO8	C,A,P	1 to 12	15	33%	5	17%	5	17%	25	33%	2
		CO2	Laboratory safety, specimen selection and processing, isolation methods, immunologic diagnosis and treatment.	PO1-PO8	C,A,P	1 to 12	15	33%	5	17%	5	17%	25	33%	2
		CO3	Epidemiology and pathogenesis of mycosis, parasitic and infections are explored	PO1-PO8	C,A,P	1 to 12	15	33%	5	17%	5	17%	25	33%	2
		Total					45	100%	15	50%	15	50%	75	100%	3

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 5	Blood Bank and General Pathology - I/BMLT 122L	CO1	The student should be able to apply the basic knowledge of hematology, histopathology, and cytology in laboratory	PO1-PO8	C,A,P	1,2,3,4	15	33%	5	17%	5	17%	25	33%	2
		CO2	The student should perform the techniques and staining procedure in histopathology and cytology	PO1-PO8	C,A,P	1,2,3,4	15	33%	5	17%	5	17%	25	33%	2
		CO3	The student should perform the techniques and staining procedure in histopathology and cytology	PO1-PO8	C,A,P	1,2,3,4	15	33%	5	17%	5	17%	25	33%	2
		Total					45	100%	15	50%	15	50%	75	100%	3
	Basics of Clinical Skill Learning/CEC 005 L	CO1	After successful accomplishment of the course, the students would be able to Measure Vital Signs, do basic physical Examination of the patients, NG tube basics, Administration of Medicines	PO1-PO8	C,A	1,2,3,4,6	40	89%					40	89%	3
		CO2	The students will learn about Asepsis, and the Cleanliness related to asepsis and on mobility of the patients	PO1-PO8	C,A	5	5	11%					5	11%	1
		Total					45	100%					45	100%	3
	Hospital Operation Management/CEC 006 L	CO1	Understand and apply resource management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors	PO1-PO8	C,A	1,2	15	33%					15	33%	2
		CO2	Communicate effectively and develop their leadership and teambuilding abilities	PO1-PO8	C,A	4	10	22%					10	22%	1
		CO3	Apply modern change management and innovation management concepts to optimize structures	PO1-PO8	C,A	3	10	22%					10	22%	1
		CO4	Analyze existing hospital service policies and enhance their alignment within the local and national context	PO1-PO8	C,A	5	10	22%					10	22%	1
		Total					45	100%					45	100%	3
Semester 6	Clinical Biochemistry - II/BMLT 124 L	CO1	At the end of semester students shall be able to Work as a Laboratory Technician in Hospital Laboratories, Pharmaceutical industries & in Research institute	PO1-PO8		1,2,3,4,5	30	100%	15	25%	15	25%	60	100%	3
		Total					30	100%	15	25%	15	25%	60	100%	3
	Medical Microbiology- II/BMLT 125L	CO1	The main aim of this course is to train students in the field of Medical Microbiology.	PO1-PO8		1,2	8	18%	5	17%	5	17%	18	24%	1
		CO2	Theoretical as well as practical training is imparted to the students in various branches of Microbiology namely Bacteriology, Virology, Parasitology, Immunology, serology and Mycology so that they can participate in good patient care and prevention of infectious diseases in the community.	PO1-PO8		3 TO 11	30	67%	5	17%	5	17%	40	53%	3
		CO3	They are introduced to basic and advanced methods used in the field of diagnostic Microbiology	PO1-PO8		8,9	7	16%	5	17%	5	17%	17	23%	1
		Total					45	100%	15	50%	15	50%	75	100%	3
	Blood Bank and General Pathology - II/BMLT 126 L	CO1	The student be well versed with the techniques in blood banking like components and FDA regulations	PO1-PO8		1	18	40%	7	23%	7	23%	32	43%	2
		CO2	The B.Sc graduate should have sound knowledge and basic skills of working in a pathology lab and blood bank	PO1-PO8		2,3	27	60%	8	27%	8	27%	35	47%	3
		Total					45	100%	30	100%	30	100%	75	100%	3

CO PO MAPPING (Matrix)

Programe - B.Sc AT OT

Semester - Smester III, IV, V & VI

PO1 – Knowledge & Skill Development- An ability to apply knowledge of healthcare technology (including clinical subjects, investigations/ Procedures, handling instruments)

PO2 – Critical Thinking – To apply professional judgment and rational thinking in decision-making

PO3 - Problem solving – Correlation of professional knowledge applied to current clinical or healthcare practices.

PO4 -Professional ethics – To adopt and apply code of ethics prescribed by professional bodies in professional and social context. Maintain appropriate boundaries with patients and care givers and maintain confidentiality.

PO5 – Communication skills – To communicate effectively with the patients, care givers and other healthcare professional for addressing patient related issues and to deliver and information

PO6 – Individual / Team work - ability to function on multi-disciplinary teams

PO 7- Holistic development: Development of intellectual mental, Physical, Emotional & Social abilities, so as to be capable of facing the demands & challenges of every day life.

PO8 – Lifelong learning - To develop continuous learning attitude in context of research, advances in clinical practices and to inculcate professionalism and evidence based practices

PO Mapping same with correlation level 3,2,1 The notation of 1 - low, 2 - moderate , 3 - high

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 3	Introduction To Operation Theatre Technology (OT)	CO1	Demonstrate ability to prepare and maintain Operation Theater	3	2	2	3	2	3	1	3	2.3
		CO2	Able to identify and move to maintain a sterile field	1	2	1	2	2	2	1	3	1.7
		CO3	Manage and maintain theatre equipments	3	3	2	3	2	2	2	3	2.5
	Average			2.3	2.3	2.6	2	2	2.3	1.3	3	2.2
	Introduction to Anesthesia Technology (AT)	CO1	Suggesting a simple anesthetic plan commonly used anesthesia noninvasive	3	2	3	3	2	2	2	3	2.5
		CO2	Monitoring in the Operation Theatre	3	2	2	2	3	3	2	3	2.5
	Average			3	2	2.5	2.5	2.5	2.5	2	3	2.5
	Principles Of Anesthesia	CO1	Students understand the Basic anaesthetic equipment the working principle of the AT equipment	3	3	3	3	2	3	2	3	2.7
		CO2	Able to Monitor the physiological parameters	3	3	3	3	3	3	3	3	3
	Average			3	3	3	3	2.5	3	2.5	2	2.7
	Pursuit of Inner Self Excellence (POIS) GEC 001 L	CO1	Students will become self dependent, more decisive and develop intuitive ability for their study and career related matter.	2	2	3	3	2	3	2	3	2.5
		CO2	Student's ability to present their ideas will be developed.	2	2	2	2	2	2	2	2	2

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 3	Pursuit of Inner Self Excellence (POIS) GEC 001 L	CO3	Enhanced communication skills, public speaking & improved Presentation ability.	2	2	2	2	2	2	2	2	2
		CO4	Students will be able to explore their inner potential and inner ability to become a successful researcher or technician & hence become more focused	3	2	2	3	3	3	2	3	2.6
		CO5	Students will observe significant reduction in stress level.	3	2	2	3	2	1	1	2	2
		CO6	With the development of personal attributes like Empathy, Compassion, Service, Love & brotherhood, students will serve the society and industry in better way with teamwork and thus grow professionally.	3	2	2	2	2	1	1	3	2
	Average			2.5	2	2.1	2.5	2.1	2	1.6	2.5	2.1
	Organizational Behavior GEC 002 L	CO1	Describe and apply motivation theories to team and organizational scenarios in order achieve a team's or an organization's goals and objectives.	1	1	1	3	2	3	1	2	1.7
		CO2	Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviours in team and organizational settings.	1	1	1	3	2	3	1	2	2.3
		CO3	Explain types of teams and apply team development, team effectiveness, and group decision making models and techniques. Analyse and apply leadership theories and better understand their own leadership style.	1	1	1	3	2	3	1	2	1.7
	Average			1	1	1	3	2	3	1	2	1.75

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semesterv 4	Basic Techniques of Anesthesia	CO1	Student learns the rational use selection of regional anaesthesia techniques and the choice of local anaesthesia.	3	3	3	2	3	3	2	3	2.7
		CO2	Incorporates Basic understanding of immediate in preoperative patient management.	3	3	3	2	3	3	2	3	2.7
		CO3	Performs skills for Management of patients in post-anesthesia recovery room	3	3	3	2	3	3	2	3	2.7
	Average			3	3	3	2	3	3	2	3	2.7
	Medical Diseases Influencing Choice of Anesthesia	CO1	Students understand the apply the knowledge related to drugs, calculations of anesthetic medications in different cardiovascular, respiratory and renal diseases.	3	3	3	2	3	3	2	3	2.7
	Average			3	3	3	2	3	3	2	3	2.7
	Medicine Relevant To Operation Theatre Technology	CO1	Students know thoroughly the medicines relevant to OT such Antisialagogues, Sedatives, Anxiolytics and Narcotics understand the use of muscle relaxant and Local Anaesthetics commonly used in OT have knowledge and use of Emergency medicines	3	3	3	2	3	3	2	3	2.7
	Average			3	3	3	2	3	3	2	3	2.7
	Computers and Applications	CO1	Discuss about health informatics and different IT applications in allied health care.	2	2	2	1	2	1	1	2	1.6
		CO2	Explain the function of Hospital Information Systems	2	2	2	1	2	1	1	2	1.6
		CO3	Analyze medical standards	2	2	2	1	2	1	1	2	1.6
	Average			2	2	2	1	2	1	1	2	1.6
		CO1	To understand the importance & Methodology for research	1	1	1	1	1	1	1	2	1.1

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semesterv 4	Biostatistics and Research Methodology	CO2	To learn in detail about sampling, probability and sampling distribution, significance tests correlation and regression, sample size determination, study design and multivariate analysis.	2	1	1	1	1	1	1	2	1.1
	Average			1.5	1	1	1	1	1	1	3	1.3
	Basics of Surgical Procedures	CO1	Able to assist anesthesiologists in pre-operative, surgical theater,	3	3	3	2	3	3	2	3	2.7
	Average			3	3	3	2	3	3	2	3	2.7
	CSSD procedures	CO1	Able to manage Central sterile supply department.	3	1	2	2	1	2	1	3	1.8
		CO2	Show efficiency in methods of sterilization	3	1	2	2	1	2	1	3	1.8
		CO3	Independently demonstrated skills of disinfection and sterilization	3	1	2	2	1	2	1	3	1.8
		CO4	Verbalizes methods and prevention of infection	1	1	2	2	1	2	1	2	1.5
	Average			2.5	1	2	2	1	2	1	2.7	1.7
Semester 5	Advance Anesthesia Techniques	CO1	Able to assist anaesthesiologists in advanced anaesthesia procedures	3	2	2	2	3	2	2	3	2.3
	Average			3	2	2	2	3	2	2	3	2.3
	Basics of Clinical Skill Learning	CO1	After successful accomplishment of the course, the students would be able to Measure Vital Signs, do basic physical Examination of the patients, NG tube basics, Administration of Medicines	3	2	2	2	3	2	2	3	2.3
		CO2	The students will learn about Asepsis, and the Cleanliness related to asepsis and on mobility of the patients	3	2	2	2	3	2	2	3	2.3
	Average			3	2	2	2	3	2	2	3	2.3

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 5	Hospital Operation Management	CO1	Understand and apply resource management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors	2	2	2	1	2	2	1	2	1.7
		CO2	Communicate effectively and develop their leadership and teambuilding abilities	2	2	2	1	2	2	1	2	1.7
		CO3	Apply modern change management and innovation management concepts to optimize structures	2	2	2	1	2	2	1	2	1.7
		CO4	Analyze existing hospital service policies and enhance their alignment within the local and national context	2	2	2	1	2	2	1	2	1.7
	Average			2	2	2	1	2	2	1	2	1.7
Semester 6	Basic Intensive Care	CO1	Should be able to demonstrate all the basic intensive care required at operation theatre and in handling patient in crisis	3	3	3	2	3	3	2	3	2.7
	Average			3	3	3	2	3	3	2	3	2.7
	Specialized Anesthesia and Surgery	CO1	able to help the anaesthetist in administering anaesthesia, assist in various procedures and help in continues monitoring of patients.	3	3	3	2	3	3	2	3	2.7
	Average			3	3	3	2	3	3	2	3	2.7
	Electronics and Technology in Surgery and Anesthesia	CO1	Knowable about Basic electronics, basic principle, care and maintenance of machine at OT	2	2	2	2	2	2	1	2	1.8
		CO2	Able to manage Indenting, Record keeping and inventory maintenance	2	2	2	2	2	2	1	2	1.8
	Average			2	2	2	2	2	2	1	2	1.8

MAPPING AVERAGE

SEMESTER	COURSE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	Average
SEM III	Introduction To Operation Theatre Technology (OT)	2.3	2.3	2.6	2	2	2.3	1.3	3	2.2
	Introduction to Anesthesia Technology (AT)	3	2	2.5	2.5	2.5	2.5	2	3	2.5
	Principles Of Anesthesia	3	3	3	3	2.5	3	2.5	2	2.7
	Pursuit of Inner Self Excellence (POIS) GEC 001 L	2.5	2	2.1	2.5	2.1	2	1.6	2.5	2.1
	Organizational Behavior GEC 002 L	1	1	1	3	2	3	1	2	1.7
SEM IV	Basic Techniques of Anesthesia	3	3	3	2	3	3	2	3	2.7
	Medical Diseases Influencing Choice of Anesthesia	3	3	3	2	3	3	2	3	2.7
	Medicine Relevant To Operation Theatre Technology	3	3	3	2	3	3	2	3	2.7
	Computers and Applications	2	2	2	1	2	1	1	2	1.6
	Biostatistics and Research Methodology	1.5	1	1	1	1	1	1	3	1.3
SEM V	Basics of Surgical Procedures	3	3	3	2	3	3	2	3	2.7
	CSSD procedures	2.5	1	2	2	1	2	1	2.7	1.7
	Advance Anesthesia Techniques	3	2	2	2	3	2	2	3	2.3
	Basics of Clinical Skill Learning	3	2	2	2	3	2	2	3	2.3
	Hospital Operation Management	2	2	2	1	2	2	1	2	1.7
SEM VI	Basic Intensive Care	3	3	3	2	3	3	2	3	2.7
	Specialized Anesthesia and Surgery	3	3	3	2	3	3	2	3	2.7
	Electronics and Technology in Surgery and Anesthesia	2	2	2	2	2	2	1	2	1.8

CO & PO Relationships (Mapping Strength)

Programe - B.Sc AT OT

Semester - Smester III, IV, V & VI

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester III	Introduction To Operation Theatre Technology (OT)	CO1	Demonstrate ability to prepare and maintain Operation Theater	1,4,6,8	CAP	1	10	22.2	-	-	36	50	46	39.3	2
		CO2	Able to identify and move to maintain a sterile field	8	CP	2,3	25	55.5	-	-	24	33.3	49	41.8	2
		CO3	Manage and maintain theatre equipments	1,2,4,8	CP	4	10	22.2	-	-	12	16.6	22	18.8	1
	Average						45	100	-	-	72	100	117	100	3
	Introduction to Anesthesia Technology (AT)	CO1	Suggesting a simple anesthetic plan commonly used anesthesia noninvasive	1,3,4,8	CP	1,2,4	27	60	-	-	36	60	63	60	3
		CO2	Monitoring in the Operation Theatre	1,5,6,8	CP	3,5	18	40	-	-	24	40	42	40	2
	Average						45	100	-	-	60	100	105	100	3
	Principles Of Anesthesia	CO1	Students understand the Basic anaesthetic equipment the working principle of the AT equipment	1,2,3,4,6,8	CP	1,2,3	13	28.8	-	-	-	-	13	28.8	1
		CO2	Able to Monitor the physiological parameters	1,2,3,4,5,6,7,8	CP	4,5,6,7,8,9,10,11	32	71.1	-	-	-	-	32	71.1	3
	Average						45	100					45	100	3
	Pursuit of Inner Self Excellence (POIS) GEC 001 L	CO1	Students will become self dependent, more decisive and develop intuitive ability for their study and career related matter.	1,4,5,8	CA	3	10	22.2	-	-	-	-	10	22.2	1
		CO2	Student's ability to present their ideas will be developed.	1,4,8	CA	-	-	-	-	-	-	-	-	-	
		CO3	Enhanced communication skills, public speaking & improved Presentation ability.	1,5	CA	2	15	33.3	-	-	-	-	15	33.3	2
		CO4	Students will be able to explore their inner potential and inner ability to become a successful researcher or technician & hence become more focused	1,5	A	-	-	-	-	-	-	-	-	-	
		CO5	Students will observe significant reduction in stress level.	1,4	A	4	10	22.2	-	-	-	-	10	22.2	1
		CO6	With the development of personal attributes like Empathy, Compassion, Service, Love & brotherhood, students will serve the society and industry in better way with teamwork and thus grow professionally.	1,8	CA	1	10	22.2	-	-	-	-	10	22.2	1
	Average						45	100					45	100	3
	Organizational Behavior GEC 002 L	CO1	Describe and apply motivation theories to team and organizational scenarios in order achieve a team's or an organization's goals and objectives.	4,6	A	1,5	12	26.6	-	-	-	-	12	26.6	1
		CO2	Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviours in team and organizational settings.	4,6	CA	2,3,4	20	44.44	-	-	-	-	20	44.44	2
		CO3	Explain types of teams and apply team development, team effectiveness, and group decision making models and techniques. Analyse and apply leadership theories and better understand their own leadership style.	4,6	CA	6,7	13	28.8	-	-	-	-	13	28.8	1
	Average						45	100					45	100	3

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semesterv IV	Basic Techniques of Anesthesia	CO1	Student learns the rational use selection of regional anaesthesia techniques and the choice of local anaesthesia.	1,2,3,5,6,8	CP	1,2	30	100	-	-	60	100	90	100	3
		CO2	Incorporates Basic understanding of immediate in preoperative patient management.	1,2,3,5,6,8	CAP				-	-					
		CO3	Performs skills for Management of patients in post-anesthesia recovery room	1,2,3,5,6,8	CAP				-	-					
	Average						30	100			60	100	90	100	3
	Medical Diseases Influencing Choice of Anesthesia	CO1	Students understand the apply the knowledge related to drugs, calculations of anesthetic medications in different cardiovascular, respiratory and renal diseases.	1,2,3,5,6,8	C	1,2,3,4,5, 6,7,8,9,10, 11,12	45	100	-	-	-	-	45	100	3
	Average						45	100			-	-	45	100	3
	Medicine Relevant To Operation Theatre Technology	CO1	Students know thoroughly the medicines relevant to OT such Antisialagogues, Sedatives, Anxiolytics and Narcotics understand the use of muscle relaxant and Local Anaesthetics commonly used in OT have knowledge and use of Emergency medicines	1,2,3,5,6,8	CP	1,2,3,4,5	45	100	-	-	-	-	45	100	3
	Average						45	100			-	-	45	100	3
	nputers and Applicati	CO1	Discuss about health informatics and different IT applications in allied health care.	1,2,3,5,8	CP	1,2,3,4	11	24.4	-	-	-	-	11	24.4	1
		CO2	Explain the function of Hospital Information Systems	1,2,3,5,8	CAP	5,6,7,8, 9,10	29	64.4	-	-	-	-	29	64.4	3
		CO3	Analyze medical standards	1,2,3,5,8	CP	11,12	5	11.1	-	-	-	-	5	11.1	0
	Average						45	100					45	100	3
	Biostatistics and Research Methodology	CO1	To understand the importance & Methodology for research	1,8	CP	1,2,3,4	20	44.4	-	-	-	-	20	44.4	2
		CO2	To learn in detail about sampling, probability and sampling distribution, significance tests correlation and regression, sample size determination, study design and multivariate analysis.	1,8	CAP	5,6,7,8,9	25	55.5	-	-	-	-	25	55.5	3
	Average						45	100					45	100	3
Semester V	Basics of Surgical Procedures	CO1	Able to assist anesthesiologists in pre-operative, surgical theater, recovery room, and post-operative intensive care procedures in both minor and major surgeries.	1,2,3,5,6,8	CAP	1,2	30	100	-	-	60	100	90	100	3
	Average						30	100			60	100	90	100	3
	CSSD procedures	CO1	Able to manage Central sterile supply department.	1,8	CP	1	30	100	-	-	-	-	30	100	3
		CO2	Show efficiency in methods of sterilization	1,8	CP				-	-	-	-			
		CO3	Independently demonstrated skills of disinfection and sterilization	1,8	CP				-	-	-	-			
		CO4	Verbalizes methods and prevention of infection	3,4,6,8	CAP				-	-	-	-			
	Average						30	100					30	100	3
	Advance Anesthesia Techniques	CO1	Able to assist anaesthesiologists in advanced anaesthesia procedures such as artificial ventilation and cardiopulmonary bypass.	1,5,8	CAP	1	45	100			60	100	105	100	3
	Average						45	100			60	100	105	100	3

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester V	Basics of Clinical Skill Learning	CO1	After successful accomplishment of the course, the students would be able to Measure Vital Signs, do basic physical Examination of the patients, NG tube basics, Administration of Medicines	1,5,8	CAP	1,2,3,4,6	40	88.8	-	-	-	-	40	88.8	3
		CO2	The students will learn about Asepsis, and the Cleanliness related to asepsis and on mobility of the patients	1,5,8	CP	5	5	11.1	-	-	-	-	5	11.1	0
	Average						45	100					45	100	3
	Hospital Operation Management	CO1	Understand and apply resource management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors	1,2,3,5,6,8	CAP	1,2	15	33.33	-	-	-	-	15	33.33	2
		CO2	Communicate effectively and develop their leadership and teambuilding abilities	1,2,3,5,6,8	CAP	-	-	-	-	-	-	-	-	-	0
		CO3	Apply modern change management and innovation management concepts to optimize structures	1,2,3,5,6,8	CAP	3,4	20	44.44	-	-	-	-	20	44.44	2
		CO4	Analyze existing hospital service policies and enhance their alignment within the local and national context	1,2,3,5,6,8		5	10	22.22	-	-	-	-	10	22.22	1
	Average						45	100					45	100	3
Semester VI	Basic Intensive Care	CO1	Should be able to demonstrate all the basic intensive care required at operation theatre and in handling patient in crisis	1,2,3,5,6,8	CAP	1-16	30	100	-	-	-	-	30	100	3
	Average						30	100	-	-	-	-	30	100	3
	Specialized Anesthesia and Surgery	CO1	able to help the anaesthetist in administering anaesthesia, assist in various procedures and help in continues monitoring of patients.	1,2,3,5,6,8	CAP	1,2,3,4	60	100	-	-	-	-	60	100	3
	Average						60	100	-	-	-	-	60	100	3
	Electronics and Technology in Surgery and Anesthesia	CO1	Knowable about Basic electronics, basic principle, care and maintenance of machine at OT	1,2,3,4,5,6,8	CP	1	25	55.5	-	-	-	-	25	55.5	3
		CO2	Able to manage Indenting, Record keeping and inventory maintenance	1,2,3,4,5,6,8	CP	2	20	44.4	-	-	-	-	20	44.4	2
	Average						45	100	-	-	-	-	45	100	3

CO PO MAPPING (Matrix)

Programe - B. Optometry

Semester - Smester III, IV, V & VI

PO1 – Knowledge & Skill Development- An ability to apply knowledge of healthcare technology (including clinical subjects, investigations/ Procedures, handling instruments)

PO2 – Critical Thinking – To apply professional judgment and rational thinking in decision-making

PO3 - Problem solving – Correlation of professional knowledge applied to current clinical or healthcare practices.

PO4 -Professional ethics – To adopt and apply code of ethics prescribed by professional bodies in professional and social context. Maintain appropriate boundaries with patients and care givers and maintain confidentiality.

PO5 – Communication skills – To communicate effectively with the patients, care givers and other healthcare professional for addressing patient related issues and to deliver and information

PO6 – Individual / Team work - ability to function on multi-disciplinary teams

PO 7- Holistic development: Development of intellectual mental, Physical, Emotional & Social abilities, so as to be capable of facing the demands & challenges of every day life.

PO8 – Lifelong learning - To develop continuous learning attitude in context of research, advances in clinical practices and to inculcate professionalism and evidence based practices

PO Mapping same with correlation level 3,2,1 The notation of 1 - low, 2 - moderate , 3 - high

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 3	Physical Optics BOPTOM 112 L	CO1	To understand about fundamentals of light, properties and various phenomena of light	3	2	2	1	1	1	3	3	2.0
		Total		3	2	2	1	1	1	3	3	2.0
	Geometrical Optics BOPTOM 113 L	CO1	To equip the students with a thorough knowledge of mirrors and lenses	3	2	3	1	1	1	3	3	2.1
		CO2	To be able to predict the basic properties of the images formed by various optical instruments.	3	3	3	1	1	1	3	3	2.3
		Total		3	2.5	3	1	1	1	3	3	1.5
	Visual Optics I/II BOPTOM 114 L	CO1	To understand the fundamentals of optical components of the eye, and to predict the retinal image formed by optical system of the eye.	3	3	2	1	1	1	3	3	2.1

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 3	Visual Optics I/II BOPTOM 114 L	CO2	Ability to manage refractive errors with understanding of visual acuity, measurement techniques of optical constants of eye, objective and subjective refraction.	3	3	3	3	3	3	3	3	3.0
		Total		3	3	2.5	2	2	2	3	3	2.6
	Ocular Diseases I BOPTOM 115 L	CO1	To understand and apply knowledge about the Etiology,Epidemiology, clinical picture of ocular diseases, Diagnostic approach and ,Management of the anterior segment ocular diseases	3	3	3	3	3	3	3	3	3.0
		Total		3	3	1	2	3	2	3	2	2.8
	Clinical Examinations and Visual Systems BOPTOM 116 L	CO1	To know the purpose, and ability to set up devices required for dignostic tests, understand indications and contraindications of the test, perform step-by-step procedures, document and interpret the findings of the various clinical optometry procedures	3	3	3	3	3	3	3	3	3.0
		Total		3	3	2	3	3	1	2	3	1.8
	Pursuit of Inner Self Excellence (POIS)	CO1	Students will become self dependent, more decisive and develop intuitive ability for their study and career related matter.	2								0.3
		CO2	Development of the ability to present their ideas in professional manner	2								0.3
		CO3	Enhance communication skills, public speaking & improved Presentation ability	2								0.3

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 3	Pursuit of Inner Self Excellence (POIS)	CO4	Students will be able to explore their inner potential and inner ability to become a successful researcher or professional & hence become more focused.	2								0.3
		CO5	Ability to observe and manage stress levels while performing their professional duties	2								0.3
		CO6	Development of personal attributes like Empathy, Compassion, Service, Love & brotherhood, ability to serve the society and industry in better way with teamwork and thus grow professionally	2								0.3
		Total		2								0.3
	Organizational Behavior GEC 002 L	CO1	Describe and apply motivation theories to team and organizational scenarios in order achieve a team's or an organization's goals and objectives	2			3	2	3			1.3
		CO2	Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviours in team and organizational settings	1			3	1	3			1.0
		CO3	Explain types of teams and apply team development, team effectiveness, and group decision making models and techniques. Analyse and apply leadership theories and better understand their own leadership style.	1			3	1	3			1.0
		Total		1.3			3.0	1.3	3			1.1

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 4	Optometric Optics I & II BOPTOM 117 L	CO1	To understand the theory of spectacle lenses, their materials,manufacturing process, types, advantages and disadvantages, calculations involved, when and how to prescribe	3	2	3	1	1	1	3	3	2.1
		CO2	Demontsrat and apply the knowledge of construction, design application and development of lenses . particularly of the methods of calculating their power and effect ,selction of lenses , dispensing, troubleshooting and complaint handling	3	3	3	3	3	3	3	3	3.0
		Total		3	2.5	3	2	2	2	3	3	2.6
	Ocular Diseases II & Glaucoma BOPTOM 118 L	CO1	To understand and apply knowledge about the Etiology,Epidemiology, clinical picture of ocular diseases, Diagnostic approach and ,Management of the posterior segment ocular diseases and glaucoma.	3	3	3	3	3	3	3	3	3.0
		Total		3	3	3	3	3	3	3	3	3.0
	Dispensing Optics BOPTOM 119 L	CO1	To understand the theory behind spectacle frames, their materials,manufacturing process, types, advantages and disadvantages, calculations involved, when and how to prescribe	3	3	3	1	1	3	3	3	2.5
	Dispensing Optics BOPTOM 119	CO2	To understand and apply the knowledge of construction, designs and types of spectacle frames, selection of frames, measurements associated with dispensing of spectacle.	3	3	3	1	3	1	3	3	2.5

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 4	BOPTOM 119 L	CO3	Ability to dispense sepctacles with appropriate instructions, perform troubleshooting and resolve complaints of the patients	3	3	3	3	2	3	3	3	2.9
		Total		3	3	3	1.7	2.0	2.3	3	3	2.6
	Optometric Instrumentation BOPTOM 120 L	CO1	To gain theoretical knowledge and basic practical skill in handling instruments used in optometry/ ophthalmogy clincal practises	3	3	3	3	3	3	3	3	3.0
		Total		3	3	3	3	3	3	3	3	3.0
	Basic &Occular Pharmacology BOPTOM 121 L	CO1	To understand the drug compositions, actions, uses, adverse effects and mode of administration of drugs, especially related to eyes.	3	3	2	1	1	1	3	3	2.1
		Total		3	3	2	1	1	1	3	3	2.1
	Computer and applications AEC 003 L	CO1	Discuss about health informatics and different IT applications in allied health care.	3	1	1	1	3	2	2	3	2.0
		CO2	Explain the function of Hospital Information Systems	3	1	1	1	3	2	1	1	1.6
		CO3	Understand medical standards	3	1	1	1	3	1	1	1	1.5
		Total		3	1	1	1	3	1	1	1	1.7
	Biostatistics and Research Methodology AEC 004 L	CO1	To understand the importance, study designs & Methodology of research	3	1	1	1	1	2	2	3	1.8
		CO2	To learn in detail about sampling, probability and sampling distribution, significance tests correlation and regression and multivariate analysis.	3	1	1	1	1	2	2	3	1.8
		Total		3	1	1	1	1	2	2	3	1.8
	Contact Lenses I BOPTOM 123 L	CO1	A detailed knowledge of lens design, materials, and manufacture for RGP including verification	3	3	3	1	1	1	3	3	2.3

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 5	Contact Lenses I BOPTOM 123 L	CO3	An ability to fit and assess a range of RGP Lenses for Sperical, regular and irregular astigmatsism toric and Prebyopia correction	3	3	3	3	3	3	3	3	3.0
		CO4	Ability to finalise the CL design for various ocular conditions and patient demands, recommending care and maintanace schedule	3	3	3	3	3	3	3	3	3.0
		CO5	Identify and manage the adverse effects of contact lens	3	3	3	3	3	3	3	3	3.0
		Total		3	3	3	2.5	2.5	2.5	3	3	2.8
	Binocular Vision I & II BOPTOM 124 L	CO1	To gain knowledge of the gross anatomy and physiology relating to the extraocular muscles	3	1	1	1	1	1	3	3	1.8
		CO2	Provide a detailed explanation of, and differentiate between the etiology, investigation and management of binocular vision anomalies	3	1	1	1	1	1	3	3	1.8
		CO3	Adapt skills and interpret clinical results following investigation of binocular vision anomalies appropriately and safely	3	3	3	2	3	3	3	3	2.9
			To understand the role of an optometrists for co management of an starbismic anomalies with ophthalmologist	3	3	3	3	3	3	3	3	3.0
		Total		3	2	2	1.8	2	2	3	3	2.3
	Low Vision Aids BOPTOM 125 L	CO1	Understanding definition ,epidemiology and terminology of Low Vision	3	1	1	1	1	1	3	3	1.8
		CO2	Ability to do assesment of low vision patients and determine appropriate management plan for them.	3	3	3	3	3	3	3	3	3.0

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 5	Low Vision Aids BOPTOM 125 L	CO3	Ability to determine magnification requirements and to prescribe, dispense electronic and optical low vision task appropriate devices.	3	3	3	3	3	3	3	2	2.9
		CO4	Ability to select and prescribe suitable functional adaptive devices for LV patients	3	3	3	3	3	3	3	3	3.0
		CO5	Ability to establish effective communication with individuals, their family, careers and with other organizations and professionals for effective management of Lvpatient	3	3	3	3	3	3	3	3	3.0
		Total		3	3	3	3	3	3	3	2.8	2.7
	Systemic Diseases BOPTOM 126 L	CO1	To have an understanding of various systemic diseases that all affect the eyes	3	1	1	1	1	1	3	3	1.8
		CO2	To have an understanding of the ocular side effects of various drugs that are used to manage or treat systemic diseases	3	1	1	1	1	1	3	3	1.8
		CO3	To understand the role of an optometrists for co management of an systemic diseases with other health care professionals	3	3	3	3	3	3	3	3	3.0
		Total		3	2	2	2	2	2	3	3	2.2
	Basics of Clinical Skill Learning CEC 005 L	CO1	After successful accomplishment of the course, the students would be able to Measure Vital Signs, do basic physical Examination of the patients, NG tube basics, Administration of Medicines	3	1	1	2	3	2	2	1	1.9
		CO2	The students will learn about Asepsis, and the Cleanliness related to asepsis and on mobility of the patients	3	1	1	2	3	2	2	1	1.9
		Total		3	1	1	2	3	2	2	1	1.9

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 6	Hospital Operation Management CEC 006 L	CO1	Understand and apply resource management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors	3	1	1	1	3	2	2	3	2.0
		CO2	Communicate effectively and develop their leadership and teambuilding abilities	1	1	1	3	3	3	1	1	1.8
		CO3	Apply modern change management and innovation management concepts to optimize structures	1	1	1	3	3	3	1	1	1.8
		CO4	Analyze existing hospital service policies and enhance their alignment within the local and national context	1	1	1	3	3	3	1	1	1.8
		Total		1	1	1	3	3	3	1	1	1.8
	Contact Lenses II BOPTOM 128 L	CO1	A detailed knowledge of lens design, materials, and manufacture for Soft contact lenses including verification	3	3	2	1	1	1	3	3	2.1
		CO2	An ability to fit and assess a range of SCL Lenses for Sperical, astigmatism and Prebyopia correction	3	3	3	3	3	3	3	3	3.0
		CO3	Ability to finalise the CL design for various ocular conditions and patient demands, recommending care and maintanace schedule	3	3	3	3	3	3	3	3	3.0
		CO4	Identify and manage the adverse effects of contact lens	3	3	3	3	3	3	3	3	3.0
		Total		3	3	2.8	2.5	2.5	2.5	3	3	2.8
	Sports Vision BOPTOM 129 L	CO1	To understand visual demands for various kinds of sports for athletes	3	1	1	1	1	1	3	3	1.8
		CO2	To perform a comprehensive sports vision assessment for athletes	3	3	3	1	2	1	3	3	2.4

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 6	Sports Vision BOPTOM 129 L	CO3	To be able prescribe vision correction appropriate to address the visual demands for sport activity	3	3	3	3	3	3	3	3	3.0
		CO4	To be able to prescribe vision training and protective devices to minimize ocular trauma due to sports.	3	3	3	3	3	3	3	3	3.0
		Total		3	3	3	3	3	3	3	3	2.5
	Pediatric and Geriatric Optometry BOPTOM 130 L	CO1	To gain knowledge on common ocular diseases in pediatric and geriatric age group.	3	1	1	1	1	1	3	3	1.8
		CO2	Be able to identify, investigate the age related changes/ developmental and congenital anomalies in the eyes.	3	3	3	1	2	1	3	3	2.4
		CO3	Communicate and counsel effectively with the pediatric and geriatric patients and their attendees.	3	3	3	3	2	3	3	3	2.9
		CO4	To dispense appropriate optical correction in the form of Spectacle/ Contact lenses/ LVA with proper instructions.	3	3	3	3	3	3	3	3	3.0
		CO5	Communicate professionally with other health care professionals in terms of accurate presentation of patients' symptoms, critical analysis of clinical findings and suitable plan of action	3	3	3	3	3	3	3	3	3.0
		CO6	Recognize the professional responsibility and need of life-long learning in geriatric and pediatric eye care.	3	3	2	3	2	2	3	3	2.6
		Total		3	3	2	3	2	2	3	3	2.6

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 6	Occupational Optometry BOPTOM 131 L	CO1	To gain and demonstrate the knowledge of visual requirements of jobs• To be able to apply different types of protocols for doing a right clinical history according to the patient profile and its context (workplace, free activities, etc).	3	1	1	1	1	1	3	3	1.8
		CO2	To be able to know the functional limits of human vision and its relationship with age, as well as at occupational contexts and free activities, linking with the task visibility factors	3	1	1	1	1	1	3	3	1.8
		CO3	To acquire ability for examining, give diagnosis, and manage visual anomalies, with special relevance in the differential diagnosis related with occupational and free activity contexts	3	3	3	3	3	3	3	3	3.0
		CO4	To be able to evaluate eye hazards in occupational or free-time activities under radiant energy exposures, as well as continuous light sources such as laser, and understand their controls for avoiding eye injuries	3	3	3	3	2	2	3	3	2.8
		CO5	To be able to identify and analyze environmental and occupational hazards causing eye injuries (mechanic, chemical, electric, etc).	3	3	2	2	3	2	3	3	2.6
		CO6	To acquire ability for evaluating the visual performance of any patient and propose appropriate optical prescription, environment design, visual therapy, etc	3	3	3	3	3	2	3	3	2.9

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 6	Occupational Optometry BOPTOM 131 L	CO7	To be able to communicate and inform to patient about diagnostic tests, him/her clearly explaining the interpretation and their consequences of their diagnosis.	3	3	3	2	3	2	3	3	2.8
		CO8	To gain knowledge of the international and national standards related to visual and eye health in variety of occupations	3	3	1	1	2	1	3	3	2.1
		Total		3	3	1	1	2	1	3	3	2.5

CO & PO Relationships (Mapping Strength)

Programe - B. Optometry

Semester - Semester III, IV, V & VI

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 3	Physical Optics BOPTOM 112 L	CO1	To understand about fundamentals of light, properties and various phenomena of light	PO1,PO2 ,PO3,PO7,PO8	C	1' - 5	45	100	60	100		0	105	100	3
							45	100		0		0	45	100	3
	Geometrical Optics BOPTOM 113 L	CO1	To equip the students with a thorough knowledge of mirrors and lenses	PO1,PO2 ,PO3,PO7,PO8	C	1'- 5	29	64	30	50	0	0	59	56	3
		CO2	To be able to predict the basic properties of the images formed by various optical instruments.	PO1-PO8	CAP	7'-12	16	36	30	50	0	0	46	44	2
							45	100		100	0	0	45	100	3
	Visual Optics I/II BOPTOM 114 L	CO1	To understand the fundamentals of optical components of the eye, and to predict the retinal image formed by optical system of the eye.	PO1,PO2 ,PO3,PO7,PO8	C	1'-2	33	73	30	50	0	0	63	53	3
		CO2	Ability to manage refractive errors with understanding of visual acuity, measurement techniques of optical constants of eye, objective and subjective refraction.	PO1-PO8	CAP	3'-4	27	60	30	50	0	0	57	48	2
							60	100	60	100	0	0	120	100	3
	Ocular Diseases I BOPTOM 115 L	CO1	To understand and apply knowledge about the Etiology,Epidemiology, clinical picture of ocular diseases, Diagnostic approach and ,Management of the anterior segment ocular diseases	PO1-PO8	CAP	1'-6	60	100	0	0		0	60	100	3
							60	100		100		0	60	100	3
	Clinical Examinations and Visual Systems BOPTOM 116 L	CO1	To know the purpose, and ability to set up devices required for dignostic tests, understand indications and contraindications of the test, perform step-by-step procedures, document and interpret the findings of the various clinical optometry procedures	PO1-PO8	CAP	1'-4	45	100	30	50	30	50	105	100	3
							45	100		50		50	105	100	3
	Pursuit of Inner Self Excellence (POIS)	CO1	Students will become self dependent, more decisive and develop intuitive ability for their study and career related matter.	PO1-PO8	C,A	1,2	8	18%					8	18%	1
		CO2	Development of the ability to present their ideas in professional manner	PO1-PO8	C,A	2,4	7	16%					7	16%	1
		CO3	Enhance communication skills, public speaking & improved Presentation ability	PO1-PO8	C,A	1	5	11%					5	11%	1
		CO4	Students will be able to explore their inner potential and inner ability to become a successful researcher or professional & hence become more focused.	PO1-PO8	C,A	1,3	15	33%					15	33%	2

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 3	Pursuit of Inner Self Excellence (POIS)	CO5	Ability to observe and manage stress levels while performing their professional duties	PO1-PO8	C,A	1	5	11%					5	11%	1
		CO6	Development of personal attributes like Empathy, Compassion, Service, Love & brotherhood, ability to serve the society and industry in better way with teamwork and thus grow professionally	PO1-PO8	C,A	4	5	11%					5	11%	1
							45	100%					45	100%	3
	Organizational Behavior GEC 002 L	CO1	Describe and apply motivation theories to team and organizational scenarios in order achieve a team's or an organization's goals and objectives	PO1-PO8	C,A	1,3,4	18	40%					18	40%	2
		CO2	Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviours in team and organizational settings	PO1-PO8	C,A	2,5	14	31%					14	31%	2
		CO3	Explain types of teams and apply team development, team effectiveness, and group decision making models and techniques. Analyse and apply leadership theories and better understand their own leadership style.	PO1-PO8	C,A	6,7	13	29%					13	29%	1
							45	100%					45	100%	3
Semester 4	Optometric Optics I & II BOPTOM 117 L	CO1	To understand the theory of spectacle lenses, their materials,manufacturing process, types, advantages and disadvantages, calculations involved, when and how to prescribe	PO1,PO2 ,PO3,PO7,PO8	C	1'- 12	29	48	45	50		0	74	49	2
		CO2	Demontsrat and apply the knowledge of construction, design application and development of lenses . particularly of the methods of calculating their power and effect ,selction of lenses , dispensing, troubleshooting and complaint handling	PO1-PO8	CAP	13'-19	31	52	45	50		0	76	51	3
							60	100		100		0	60	100	3
	Ocular Diseases II & Glaucoma BOPTOM 118 L	CO1	To understand and apply knowledge about the Etiology,Epidemiology, clinical picture of ocular diseases, Diagnostic approach and ,Management of the posterior segment ocular diseases and glaucoma.	PO1-PO8	CAP	1'-5	45	100		0		0	45	100	3
							45	100		0		0	45	100	3
	Dispensing Optics BOPTOM 119 L	CO1	To understand the theory behind spectacle frames, their materials,manufacturing process, types, advantages and disadvantages, calculations involved, when and how to prescribe	PO1,PO2 ,PO3,PO7,PO8	C	1	5	11	5	6	5	6	15	11	1

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 4	Dispensing Optics BOPTOM 119 L	CO2	To understand and apply the knowledge of construction, designs and types of spectacle frames, selection of frames, measurements associated with dispensing of spectacle.	PO1-PO8	CAP	2' - 5	15	33	35	39	35	39	85	63	3
		CO3	Ability to dispense sepctacles with appropriate instructions, perform troubleshooting and resolve complaints of the patients	PO1-PO8	CAP	6'-10	25	56	5	6	5	6	35	26	2
							45	100	45	44	45	50	135	100	3
	Optometric Instrumentation BOPTOM 120 L	CO1	To gain theoretical knowledge and basic practical skill in handling instruments used in optometry/ ophthalmogy clincal practises	PO1-PO8	CAP	1'- 11	45	100	15	50	15	50	75	100	3
							45	100	15	50	15	25	75	100	3
	Basic &Occular Pharmacology BOPTOM 121 L	CO1	To understand the drug compositions, actions, uses, adverse effects and mode of administration of drugs, especially related to eyes.	PO1,PO2 ,PO3,PO7,PO8	C	1'- 10	30	100	0	0	0	0	30	100	3
							30	100	0	0	0	0	30	100	3
	Computer and applications AEC 003 L	CO1	Discuss about health informatics and different IT applications in allied health care.	PO1-PO8	C,A	1,2,3,4,5	16	36%					16	36%	2
		CO2	Explain the function of Hospital Information Systems	PO1-PO8	C,A	6,7,8	15	33%					15	33%	2
		CO3	Understand medical standards	PO1-PO8	C,A	9,10,11,12	14	31%					14	31%	2
							45	100%					45	100%	3
	Biostatistics and Research Methodology AEC 004 L	CO1	To understand the importance, study designs & Methodology of research	PO1-PO8	C,A	1,2,3	15	33%					15	33%	2
		CO2	To learn in detail about sampling, probability and sampling distribution, significance tests correlation and regression and multivariate analysis.	PO1-PO8	C,A	4,5,6,7,8,9	30	67%					30	67%	3
							45	100%					45	100%	3
Semester 5	Contact Lenses I BOPTOM 123 L	CO1	A detailed knowledge of lens design, materials, and manufacture for RGP including verification	PO1,PO2 ,PO3,PO7,PO8	C	1,2,3,4,5,6, 7,8,9,10	23	51	1	3	0	0	24	32	2
		CO3	An ability to fit and assess a range of RGP Lenses for Sperical, regular and irregular astigmatsism toric and Prebyopia correction	PO1-PO8	CAP	11,12,13,14 ,15	10	22	5	17	5	17	20	27	1
		CO4	Ability to finalise the CL design for various ocular conditions and patient demands, recommending care and maintanace schedule	PO1-PO8	CAP	16'-17	5	11	5	17	5	17	15	20	1
		CO5	Identify and manage the adverse effects of contact lens	PO1-PO8	CAP	18'-22	7	16	4	13	5	17	16	21	1
							45	100	15	50	15	50	75	100	3
	Binocular Vision I & II BOPTOM 124 L	CO1	To gain knowledge of the gross anatomy and physiology relating to the extraocular muscles	PO1,PO2 ,PO3,PO7,PO8	C	1'- 4	17	28	0	0	0	0	17	19	1
		CO2	Provide a detailed explanation of, and differentiate between the etiology, investigation and management of binocular vision anomalies	PO1-PO8	CAP	5'- 18	30	50	8	27	8	27	46	51	3

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 5	Binocular Vision I & II BOPTOM 124 L	CO3	Adapt skills and interpret clinical results following investigation of binocular vision anomalies appropriately and safely	PO1-PO8	CAP	5'- 18	10	17	7	23	7	23	24	27	1
			To understand the role of an optometrists for co management of an starbismic anomalies with ophthalmologist	PO1-PO8	CAP	5'- 18	3	5	0	0	0	0	3	3	1
							60	22	15	23		0	75	100	3
	Low Vision Aids BOPTOM 125 L	CO1	Understanding definition ,epidemiology and terminology of Low Vision	PO1,PO2 ,PO3,PO7,PO8	C	1 & 2	4	13	0	0	0	0	4	13	1
		CO2	Ability to do assesment of low vision patients and determine appropriate management plan for them.	PO1-PO8	CAP	3 & 4	4	13	0	0	0	0	4	13	1
		CO3	Ability to determine magnification requirements and to prescribe, dispense electronic and optical low vision task appropriate devices.	PO1-PO8	CAP	5 & 6	5	17	0	0	0	0	5	17	1
		CO4	Ability to select and prescribe suitable functional adaptive devices for LV patients	PO1-PO8	CAP	7' - 10	11	37	0	0	0	0	11	37	2
		CO5	Ability to establish effective communication with individuals, their family, careers and with other organizations and professionals for effective management of Lvpatient	PO1-PO8	CAP	11 & 12	6	20	0	0	0	0	6	20	1
							30	57		0	0	0	30	100	3
	Systemic Diseases BOPTOM 126 L	CO1	To have an understanding of various systemic diseases that all affect the eyes	PO1,PO2 ,PO3,PO7,PO8	C	1'-17	20	44	0	0	0	0	20	44	2
		CO2	To have an understanding of the ocular side effects of various drugs that are used to manage or treat systemic diseases	PO1,PO2 ,PO3,PO7,PO8	C	1'-17	20	44	0	0	0	0	20	44	2
		CO3	To understand the role of an optometrists for co management of an systemic diseases with other health care professionals	PO1-PO8	CAP	1'-17	5	11	0	0	0	0	5	11	1
							25	100	0	0	0	0	45	100	3
	Basics of Clinical Skill Learning CEC 005 L	CO1	After successful accomplishment of the course, the students would be able to Measure Vital Signs, do basic physical Examination of the patients, NG tube basics, Administration of Medicines	PO1-PO8	C,A	1,2,3,4,6	40	89%					40	89%	3
		CO2	The students will learn about Asepsis, and the Cleanliness related to asepsis and on mobility of the patients	PO1-PO8	C,A	5	5	11%					5	11%	1
							45	1		0		0	45	100%	3
Semester 6	Hospital Operation Management CEC 006 L	CO1	Understand and apply resource management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors	PO1-PO8	C,A	1,2	15	33%					15	33%	2

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 6	Hospital Operation Management CEC 006 L	CO2	Communicate effectively and develop their leadership and teambuilding abilities	PO1-PO8	C,A	4	10	22%					10	22%	1
		CO3	Apply modern change management and innovation management concepts to optimize structures	PO1-PO8	C,A	3	10	22%					10	22%	1
		CO4	Analyze existing hospital service policies and enhance their alignment within the local and national context	PO1-PO8	C,A	5	10	22%					10	22%	1
							20	100%		0		0	20	100%	3
	Contact Lenses II BOPTOM 128 L	CO1	A detailed knowledge of lens design, materials, and manufacture for Soft contact lenses including verification	PO1,PO2 ,PO3,PO7,PO8	C	1,2,3,4,5,6, 7,8,9,10	23	51	1	3	0	0	24	32	2
		CO2	An ability to fit and assess a range of SCL Lenses for Sperical, astigmatism and Prebyopia correction	PO1-PO8	CAP	11,12,13,14 ,15	10	22	5	17	5	17	20	27	1
		CO3	Ability to finalise the CL design for various ocular conditions and patient demands, recommending care and maintanace schedule	PO1-PO8	CAP	16'-17	5	11	5	17	5	17	15	20	1
		CO4	Identify and manage the adverse effects of contact lens	PO1-PO8	CAP	18'-22	7	16	4	13	5	17	16	21	1
							45	100	15	50	15	50	75	100	3
	Sports Vision BOPTOM 129 L	CO1	To understand visual demands for various kinds of sports for athletes	PO1,PO2 ,PO3,PO7,PO8	C	1'- 6	12	40	0	0	0	0	12	40	2
		CO2	To perform a comprehensive sports vision assessment for athletes	PO1-PO8	CAP	6'- 7	6	20	0	0	0	0	6	20	1
		CO3	To be able prescribe vision correction appropriate to address the visual demands for sport activity	PO1-PO8	CAP	8',9 & 10	8	27	0	0	0	0	8	27	1
		CO4	To be able to prescribe vision training and protective devices to minimize ocular trauma due to sports.	PO1-PO8	CAP	11'-13	4	13	0	0	0	0	4	13	1
							30	100	0	0	0	0	30	100	3
	Pediatric and Geriatric Optometry BOPTOM 130 L	CO1	To gain knowledge on common ocular diseases in pediatric and geriatric age group.	PO1,PO2 ,PO3,PO7,PO8	C	1',2,5 ,10, 13,19,20,24	11	37	0	0	2	7	13	43	2
		CO2	Be able to identify, investigate the age related changes/ developmental and congenital anomalies in the eyes.	PO1,PO2 ,PO3,PO7,PO8	C A	3,4,11,12,1 4,15,16	9	30	0	0	7	23	16	53	3
		CO3	Communicate and counsel effectively with the pediatric and geriatric patients and their attendees.	PO1-PO8	C A	8,9,17,18,1 9,21,22,23,	1	3	0	0	5	17	6	20	1
		CO4	To dispense appropriate optical correction in the form of Spectacle/ Contact lenses/ LVA with proper instructions.	PO1-PO8	CAP	8,9,17,18,1 9,21,22,23,	7	23	0	0	6	20	13	43	2
		CO5	Communicate professionally with other health care professionals in terms of accurate presentation of patients' symptoms, critical analysis of clinical findings and suitable plan of action	PO1-PO8	C A	8,9,17,18,1 9,21,22,23,	1	3	0	0	5	17	6	20	1

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 6	Pediatric and Geriatric Optometry BOPTOM 130 L	CO6	Recognize the professional responsibility and need of life-long learning in geriatric and pediatric eye care.	PO1-PO8	CAP	8,9,17,18,19,21,22,23,	1	3	0	0	5	17	6	20	1
							30	100	0	0	30	100	60	200	3
	Occupational Optometry BOPTOM 131 L	CO1	To gain and demonstrate the knowledge of visual requirements of jobs• To be able to apply different types of protocols for doing a right clinical history according to the patient profile and its context (workplace, free activities, etc).	PO1,PO2 ,PO3,PO7,PO8	1	4	13	0	0	0	0	0	4	13	1
		CO2	To be able to know the functional limits of human vision and its relationship with age, as well as at occupational contexts and free activities, linking with the task visibility factors	PO1,PO2 ,PO3,PO7,PO8	4	2	7	0	0	0	0	0	2	7	1
		CO3	To acquire ability for examining, give diagnosis, and manage visual anomalies, with special relevance in the differential diagnosis related with occupational and free activity contexts	PO1-PO8	6	3	10	0	0	0	0	0	3	10	1
		CO4	To be able to evaluate eye hazards in occupational or free-time activities under radiant energy exposures, as well as continuous light sources such as laser, and understand their controls for avoiding eye injuries	PO1-PO8	2,3	6	20	0	0	0	0	0	6	20	1
		CO5	To be able to identify and analyze environmental and occupational hazards causing eye injuries (mechanic, chemical, electric, etc).	PO1-PO8	5	3	10	0	0	0	0	0	3	10	1
		CO6	To acquire ability for evaluating the visual performance of any patient and propose appropriate optical prescription, environment design, visual therapy, etc	PO1-PO8	6,7,10	9	30	0	0	0	0	0	9	30	1
		CO7	To be able to communicate and inform to patient about diagnostic tests, him/her clearly explaining the interpretation and their consequences of their diagnosis.	PO1-PO8	9	3	10	0	0	0	0	0	3	10	1
		CO8	To gain knowledge of the international and national standards related to visual and eye health in variety of occupations	PO1-PO8	8	3	10	0	0	0	0	0	3	10	1
						33	110	0	0	0	0	0	33	110	3

CO PO MAPPING (Matrix)

Programe - B.Sc Perfusion Technology

Semester - Smester III, IV, V & VI

PO1 – Knowledge & Skill Development- An ability to apply knowledge of healthcare technology (including clinical subjects, investigations/ Procedures, handling instruments)

PO2 – Critical Thinking – To apply professional judgment and rational thinking in decision-making

PO3 - Problem solving – Correlation of professional knowledge applied to current clinical or healthcare practices.

PO4 -Professional ethics – To adopt and apply code of ethics prescribed by professional bodies in professional and social context. Maintain appropriate boundaries with patients and care givers and maintain confidentiality.

PO5 – Communication skills – To communicate effectively with the patients, care givers and other healthcare professional for addressing patient related issues and to deliver and information

PO6 – Individual / Team work - ability to function on multi-disciplinary teams

PO 7- Holistic development: Development of intellectual mental, Physical, Emotional & Social abilities, so as to be capable of facing the demands & challenges of every day life.

PO8 – Lifelong learning - To develop continuous learning attitude in context of research, advances in clinical practices and to inculcate professionalism and evidence based practices

PO Mapping same with correlation level 3,2,1 The notation of 1 - low, 2 - moderate , 3 - high

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 3	Applied Pharmacology BPT 112 L	CO1	Students will be proficient in Pharmacology with proficient knowledge about the different drugs / medicines to be given in various cardiovascular diseases, dose calculation and mode of administration.	3.0	3.0	3.0	1.0	1.0	1.0	1.0	2.0	1.9
		CO2	Also recent advances in pharmacology will play a key role in research aspect of the students.	3.0	3.0	3.0	1.0	1.0	1.0	1.0	2.0	1.9
	Average			3.0	3.0	3.0	1.0	1.0	1.0	1.0	2.0	1.9
	Applied Anatomy & Physiology of Cardiovascular System related to PT BPT 113 L	CO1	Students will be able to identify normal anatomy and vasculature and also be familiar with the pathologically diseased conditioned organs and changes in hemodynamics	3.0	3.0	3.0	1.0	0.0	0.0	1.0	3.0	1.8
	Average			3.0	3.0	3.0	1.0	0.0	0.0	1.0	3.0	1.8
	Basics of Perfusion Technology BPT 114 L	CO1	Students will understand the use of equipments in CPB and also hand on training with the equipments and materials used	3.0	3.0	3.0	2.0	3.0	2.0	2.0	3.0	2.6

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 3	Basics of Perfusion Technology BPT 114 L	CO2	Students will be able to understand the principles and use of all the equipments and its making	3.0	3.0	3.0	2.0	0.0	2.0	0.0	3.0	2.0
	Average			3.0	3.0	3.0	2.0	3.0	2.0	2.0	3.0	2.0
	Pursuit of Inner Self Excellence (POIS) GEC 001 L	CO1	Students will become self dependent, more dability for their study and career related matter.ecisive and develop intuitive	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
		CO2	Student's ability to present their ideas will be developed.	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
		CO3	Enhanced communication skills, public speaking & improved Presentation ability.	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
		CO4	Students will be able to explore their inner potential and inner ability to become a successful researcher or technician & hence become more focused.	2.0	2.0	3.0	2.0	2.0	2.0	2.0	2.0	2.1
		CO5	Students will observe significant reduction in stress level.	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
		CO6	With the development of personal attributes like Empathy, Compassion, Service, Love & brotherhood, students will serve the society and industry in better way with teamwork and thus grow professionally.	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	1.9
	Average			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	Organizational Behavior GEC 002 L	CO1	Describe and apply motivation theories to team and organizational scenarios in order achieve a team's or an organization's goals and objectives.	1.0	2.0	1.0	1.0	1.0	3.0	1.0	3.0	1.6

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 3	Organizational Behavior GEC 002 L	CO2	Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviors in team and organizational settings.	1.0	2.0	2.0	1.0	3.0	3.0	1.0	3.0	2.0
		CO3	Explain types of teams and apply team development, team effectiveness, and group decision making models and techniques.	1.0	2.0	2.0	1.0	2.0	3.0	1.0	3.0	1.9
	Average			2.0	2.0	1.7	1.0	2.0	3.0	1.0	3.0	1.8
Semester 4	Applied Physiology and Biochemistry BPT 116 L	CO1	At the end of this semester students will be able to evaluate, diagnose and help in treating the patients and differentiate patients eligible for taking for surgery or to be given meditational treatment	3.0	3.0	0.0	0.0	2.0	0.0	0.0	1.0	1.1
	Average			3.0	3.0	0.0	0.0	2.0	0.0	0.0	1.0	1.1
	Introduction of Perfusion Techniques BPT 117 L	CO1	Students will be able to collect the data before and at the time of surgery for equipment evaluation	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.9
	Average			3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.9
	Computers and Applications AEC 003 L	CO1	Discuss about health informatics and different IT applications in allied health care.	2.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.8
		CO2	Explain the function of Hospital Information Systems Analyze medical standards	2.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.8
	Average			2.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.8
	Biostatistics and Research Methodology AEC 004 L	CO1	To understand the importance & Methodology for research	2.0	2.0	1.0	1.0	1.0	0.0	0.0	2.0	1.1
		CO2	To learn in detail about sampling, probability and sampling distribution, significance tests correlation and regression, sample size determination, study design and multivariate analysis.	2.0	2.0	1.0	1.0	1.0	0.0	0.0	2.0	1.1
	Average			2.0	2.0	1.0	1.0	1.0	0.0	0.0	2.0	1.1

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 5	Perfusion Technology: Clinical BPT 119 L	CO1	To learn the pharmacokinetics and pharmacodynamics during cardiopulmonary bypass	3.0	3.0	3.0	3.0	1.0	0.0	1.0	3.0	2.1
		CO2	Dealing with conduction and termination of cardiopulmonary bypass and problems associated with it	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Average			3.0	3.0	3.0	3.0	2.0	1.5	2.0	3.0	2.6
	Perfusion Technology: Applied BPT 120 L	CO1	Techniques that can minimise the ill effects of the machinery and to improve patient outcome and the activated systemic inflammatory response system	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	2.9
	Average			3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	2.9
	Basics of Clinical Skill Learning CEC 005 L	CO1	After successful accomplishment of the course, the students would be able to Measure Vital Signs, do basic physical Examination of the patients, NG tube basics, Administration of Medicines	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.9
		CO2	The students will learn about Asepsis, and the Cleanliness related to asepsis and on mobility of the patients	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.9
	Average			3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.9
	Hospital Operation Management CEC 006 L	CO1	Understand and apply resource management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors.	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
		CO2	Communicate effectively and develop their leadership and teambuilding abilities	2.0	2.0	2.0	2.0	3.0	1.0	2.0	2.0	2.0
		CO3	Apply modern change management and innovation management concepts to optimize structures	2.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	1.9

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 5	Hospital Operation Management CEC 006 L	CO4	Analyze existing hospital service policies and enhance their alignment within the local and national context	2.0	2.0	2.0	2.0	1.0	1.0	2.0	2.0	1.8
	Average			2.0	2.0	2.0	2.0	2.0	1.3	2.0	2.0	1.9
Semester 6	Perfusion Technology : Advanced BPT 122 L	CO1	Use of machinery and amenities during emergency cases and conditions	3.0	3.0	3.0	3.0	2.0	3.0	2.0	2.0	2.6
		CO2	Management of complications related to bypass and advanced extra corporeal life support	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		CO3	Team management of perfusion accidents and management	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Average			3.0	3.0	3.0	3.0	2.7	3.0	2.7	2.7	2.9
	Recent advances in Cardiopulmonary bypass & Perfusion BPT 123 L	CO1	The students will gain knowledge about chances of a successful procedure.	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		CO2	To enable students, understand about benefit/risk to the patient if the procedure is successful/ unsuccessful	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	2.8
		CO3	The occurrence and management of various complications.	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	2.8
	Average			3.0	3.0	3.0	3.0	2.3	3.0	3.0	2.3	2.8

MAPPING AVERAGE										
Programe - B.Sc Perfusion Technology										
Semester	**Subject**	**PO1**	**P02**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**Average**
Semester 3	Applied Pharmacology	3.0	3.0	3.0	1.0	1.0	1.0	1.0	2.0	1.9
	Applied Anatomy and Physiology of Cardiovascular System related to PT	3.0	3.0	3.0	1.0	0.0	0.0	1.0	3.0	1.8
	Basics of Perfusion Technology	3.0	3.0	3.0	2.0	3.0	2.0	2.0	3.0	2.0
	Pursuit of Inner Self Excellence (POIS)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	Organizational Behavior	2.0	2.0	1.7	1.0	2.0	3.0	1.0	3.0	1.8
Semester 4	Applied Physiology and Biochemistry	3.0	3.0	0.0	0.0	2.0	0.0	0.0	1.0	1.1
	Introduction of Perfusion Technology	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.9
	Computer and Applications	2.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0
	Biostatistics and Research Methodology	2.0	2.0	1.0	1.0	1.0	0.0	0.0	2.0	1.1
Semester 5	Perfusion Technology: Clinical	3.0	3.0	3.0	3.0	1.0	0.0	0.0	2.0	1.1
	Perfusion Technology: Applied	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	2.9
	Basics of Clinical Skills Learning	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.0
	Hospital Operation Management	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.7	2.0
Semester 6	Perfusion Technology : Advanced	3.0	3.0	3.0	3.0	2.0	3.0	2.5	2.8	2.0
	Recent advances in Cardiopulmonary bypass & Perfusion	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.8	2.0

CO & PO Relationships (Mapping Strength)

Programe - B.Sc Perfusion Technology

Semester - Semester III, IV, V & VI

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester III	Applied Pharmacology BPT 112 L	CO1	Students will be proficient in Pharmacology with proficient knowledge about the different drugs / medicines to be given in various cardiovascular diseases, dose calculation and mode of administration.	1,2,3,8	C	1,2,8,9	25	42	0	0	0	0	25	42	2
		CO2	Also recent advances in pharmacology will play a key role in research aspect of the students.	1,2,3	C	3,4,5,6,7	35	58	0	0	0	0	35	58	3
	Average						60	100	0	0	0	0	60	100	
	Applied Anatomy & Physiology of Cardiovascular System related to PT BPT 113 L	CO1	Students will be able to identify normal anatomy and vasculature and also be familiar with the pathologically diseased conditioned organs and changes in hemodynamics	1,2,3,8	C	1,2,3,4	60	100	60	100	0	0	120	200	3
	Average						60	100	60	100	0	0	120	100	
	Basics of Perfusion Technology BPT 114 L	CO1	Students will understand the use of equipments in CPB and also hand on training with the equipments and materials used	1,2,3	C.P	3	20	44	0	0	40	40	60	100	3
		CO2	Students will be able to understand the principles and use of all the equipments and its making	1,2,3	C.P	1,2	25	56	0	0	20	20	45	75	3
	Average						45	100	0	0	60	100	105	100	
	Pursuit of Inner Self Excellence (POIS) GEC 001 L	CO1	Students will become self dependent, more dability for their study and career related matter.ecisive and develop intuitive	1,4,5,8	C.A								0	0	
		CO2	Student's ability to present their ideas will be developed.	1,4,8	C.A								0	0	
		CO3	Enhanced communication skills, public speaking & improved Presentation ability.	1,5,	C.A								0	0	
		CO4	Students will be able to explore their inner potential and inner ability to become a successful researcher or technician & hence become more focused.	1,5	A								0	0	
		CO5	Students will observe significant reduction in stress level.	7	A								0	0	
		CO6	With the development of personal attributes like Empathy, Compassion, Service, Love & brotherhood, students will serve the society and industry in better way with teamwork and thus grow professionally.	7	C.A								0	0	
	Average												0	0	
	Organizational Behavior GEC 002 L	CO1	Describe and apply motivation theories to team and organizational scenarios in order achieve a team's or an organization's goals and objectives.	4,6	A	1,5	12	27	0	0	0	0	12	20	1
		CO2	Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviors in team and organizational settings.	4	C.A	2,3,4	20	44	0	0	0	0	20	33	2
		CO3	Explain types of teams and apply team development, team effectiveness, and group decision making models and techniques.	6	C.A	6,7	13	29	0	0	0	0	13	22	1
	Average						45	100	0	0	0	0	45	75	

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semesterv IV	Applied Physiology and Biochemistry BPT 116 L	CO1	At the end of this semester students will be able to evaluate, diagnose and help in treating the patients and differentiate patients eligible for taking for surgery or to be given meditational treatment	1,3	C	1,2,3,4,5,6,7	45	100	60	100	0	0	105	175	3
	Average						45	100	60	100	0	0	105	100	
Semesterv IV	Introduction of Perfusion Techniques BPT 117 L	CO1	Students will be able to collect the data before and at the time of surgery for equipment evaluation	1,2,3,5,6	C.A.P	1,2,3,4	45	100	0	0	60	100	105	175	3
	Average						45	100	0	0	60	100	105	100	
	Computers and Applications AEC 003 L	CO1	Discuss about health informatics and different IT applications in allied health care.	1,8	C	1,2,3,4,5,6,7,8	31	69	0	0	0	0	31	52	3
		CO2	Explain the function of Hospital Information Systems Analyze medical standards	4,6	C	9,10,11,12	14	31	0	0	0	0	14	23	1
	Average						45	100	0	0	0	0	45	75	
	Biostatistics and Research Methodology AEC 004 L	CO1	To understand the importance & Methodology for research	1,4,8	C	1,2,3,4	20	44	0	0	0	0	20	33	2
		CO2	To learn in detail about sampling, probability and sampling distribution, significance tests correlation and regression, sample size determination, study design and multivariate analysis.	1	C	5,6,7,8,9	25	56	0	0	0	0	25	42	2
	Average						45	100	0	0	0	0	45	75	
Semester V	Perfusion Technology: Clinical BPT 119 L	CO1	To learn the pharmacokinetics and pharmacodynamics during cardiopulmonary bypass	1,2,6,8	C.A.P	2,3,4,9	24	40	0	0	20	33	44	73	3
		CO2	Dealing with conduction and termination of cardiopulmonary bypass and problems associated with it	1,2,3,5,6	C.A.P	1,5,6,7,8	36	60	0	0	40	67	76	127	3
	Average						60	100	0	0	60	100	120	100	
	Perfusion Technology: Applied BPT 120 L	CO1	Techniques that can minimise the ill effects of the machinery and to improve patient outcome and the activated systemic inflammatory response system	1,2,3,5,6	C.A.P	1,2,3,4,5,6,7	45	100	0	0	60	100	105	175	3
	Average						45	100	0	0	60	100	105	100	
	Basics of Clinical Skill Learning CEC 005 L	CO1	After successful accomplishment of the course, the students would be able to Measure Vital Signs, do basic physical Examination of the patients, NG tube basics, Administration of Medicines	1,3,5,6,8	C.A.P	1,2,3,4	35	78	0	0	0	0	35	58	3
		CO2	The students will learn about Asepsis, and the Cleanliness related to asepsis and on mobility of the patients	1	C.P	5,6	10	22	0	0	0	0	10	17	1
	Average						45	100	0	0	0	0	45	75	
	Hospital Operation Management CEC 006 L	CO1	Understand and apply resource management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors.	4,6	C.P	2	10	22	0	0	0	0	10	17	1
		CO2	Communicate effectively and develop their leadership and teambuilding abilities	6	C.P	1	5	11	0	0	0	0	5	8	1
		CO3	Apply modern change management and innovation management concepts to optimize structures	4	C	4,5	20	44	0	0	0	0	20	33	2
		CO4	Analyze existing hospital service policies and enhance their alignment within the local and national context	4,6	C	3	10	22	0	0	0	0	10	17	1
	Average						45	100	0	0	0	0	45	75	

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester VI	Perfusion Technology : Advanced BPT 122 L	CO1	Use of machinery and amenities during emergency cases and conditions	1,2,3,5,6,7,8	C.A.P	3,4	25	42	0	0	0	0	25	42	2
		CO2	Management of complications related to bypass and advanced extra corporeal life support	1,2,3,5,6	C.A.P	2,5	20	33	0	0	30	50	50	83	3
		CO3	Team management of perfusion accidents and management	2,3,5,6	C.A.P	1	15	25	0	0	30	50	45	75	3
	Average						60	100	0	0	60	100	120	100	
	Recent advances in Cardiopulmonary bypass & Perfusion BPT 123 L	CO1	The students will gain knowledge about chances of a successful procedure.	1,3,5,6	C.A.P	3,5,6	20	44	0	0	0	0	20	33	2
		CO2	To enable students, understand about benefit/risk to the patient if the procedure is successful/ unsuccessful	2,3,4,5,7	A	1,2	12	27	0	0	0	0	12	20	1
		CO3	The occurrence and management of various complications.	4,7	A.P	4,7	13	29	0	0	0	0	13	22	1
	Average						45	100	0	0	0	0	45	100	

CO PO MAPPING (Matrix)

Programe - B.Sc Cardic Care Technology

Semester - Smester III, IV, V & VI

PO1 – Knowledge & Skill Development- An ability to apply knowledge of healthcare technology (including clinical subjects, investigations/ Procedures, handling instruments)

PO2 – Critical Thinking – To apply professional judgment and rational thinking in decision-making

PO3 - Problem solving – Correlation of professional knowledge applied to current clinical or healthcare practices.

PO4 -Professional ethics – To adopt and apply code of ethics prescribed by professional bodies in professional and social context. Maintain appropriate boundaries with patients and care givers and maintain confidentiality.

PO5 – Communication skills – To communicate effectively with the patients, care givers and other healthcare professional for addressing patient related issues and to deliver and information

PO6 – Individual / Team work - ability to function on multi-disciplinary teams

PO 7- Holistic development: Development of intellectual mental, Physical, Emotional & Social abilities, so as to be capable of facing the demands & challenges of every day life.

PO8 – Lifelong learning - To develop continuous learning attitude in context of research, advances in clinical practices and to inculcate professionalism and evidence based practices

PO Mapping same with correlation level 3,2,1 The notation of 1 - low, 2 - moderate , 3 - high

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 3	Applied Anatomy, Physiology, Pharmacology in Cardiac Care BCCT 112 L	CO1	To understand Coronary Anatomy	3.0	3.0	3.0	1.0	1.0	1.0	1.0	3.0	2.0
		CO2	To enable students, differentiate between normal heart sounds and murmurs	3	2	3	2	2	1	2	3	2.3
		CO3	To enable students, a preliminary understanding of the circulatory system from a physiological and functional perspective, as well as related terminologies.	3	2	1	1	2	1	2	2	1.8
		CO4	Students will be proficient in Pharmacology with proficient knowledge about the different drugs / medicines to be given in various cardiovascular diseases, dose calculation and mode of administration. •	3	2	1	1	2	1	2	2	1.8
		CO5	Also recent advances in pharmacology will play a key role in research aspect of the students.	3	2	2	1	2	1	2	3	2.0
	Average			3.0	2.0	1.8	1.3	2.0	1.0	2.0	2.5	2.6

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 3	Basic Electrocardiography BCCT 113 L	CO1	To develop understanding regarding Electrocardiography and its procedure.	3	2	2	1	1	1	3	3	2.0
		CO2	•Describe the proper hook-up procedure for a 12-Lead ECG	3	2	2	1	1	1	3	3	2.0
		CO3	Identify basic normal ECG waveform morphology and common interpretation.	3	2	2	1	1	1	3	3	2.0
		CO4	•Enumerate the measures to be taken before, after and during ECG procedure	3.0	2.0	2.0	1.0	1.0	1.0	3.0	3.0	2.0
	Average			3	2	2	1	1	1	3	3	2
	Basic Echocardiography BCCT 114 L	CO1	To develop an understanding regarding Echocardiography.	3	3	3	2	2	1	1	3	2.3
		CO2	•To train students to perform Echocardiography examinations by explaining the position of transducers.	3	3	2	2	2	1	1	3	2.1
		CO3	•To make students aware of recent advances in Echocardiography.	3	3	2	1	2	1	1	3	2
		CO4	•To understand the role of Cardiac Care technician while assisting the Cardiologist in performing the procedure	3	3	2	1	2	1	1	3	2
	Average			3	3	2.3	1.5	2	1	1	3	16.8
		CO1	Students will become self dependent, more decisive and develop intuitive ability for their study and career related matter. • Student's ability to present their ideas will be developed.	3	2	2	1	2	3	2	2	2
		CO2	• Student's ability to present their ideas will be developed.	3	2	2	1	2	2	2	2	2
		CO3	•Enhanced communication skills, public speaking & improved Presentation ability.	3	2	2	1	2	2	2	2	2

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 3	Pursuit of inner self excellence GEC 001 L	CO4	• Students will be able to explore their inner potential and inner ability to become a successful researcher or technician & hence become more focused.	3	2	2	1	2	2	2	2	2
		CO5	• Students will observe significant reduction in stress level.	3	2	2	1	2	2	2	2	2
		CO6	• With the development of personal attributes like Empathy, Compassion, Service, Love & brotherhood, students will serve the society and industry in better way with teamwork and thus grow professionally.	3	2	2	1	2	2	2	2	2
	Average			3	2	2	1	2	2	2	2	2
	Organizational Behavior GEC 002 L	CO1	Describe and apply motivation theories to team and organizational scenarios in order achieve a team's or an organization's goals and objectives.	3	3	2	1	2	2	2	3	2
		CO2	• Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviours in team and organizational settings.	3	3	2	1	2	2	1	3	1.8
		CO3	• Explain types of teams and apply team development, team effectiveness, and group decision making models and techniques. Analyse and apply leadership theories and better understand their own leadership style	3	3	2	1	2	2	2	3	2
	Average			3	3	2	1	2	2	1.6	3	1.9

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 4	Development of Cardiovascular System: Fetal and Neonatal BCCT 116 L	CO1	This course will provide overall information of the structural development of the cardiovascular system.	3	2	3	3	2	1	1	3	2.2
		CO2	•To encourage student to apply this knowledge to understand developmental anomalies in Cardiovascular System.	3	2	3	3	2	1	1	3	2.2
	Average			3	2	3	3	2	1	1	3	2.2
	Cardiovascular Diseases pertaining to Cardiac Care Technology	CO1	This course will cover common Cardiovascular Diseases, their related pathology and microbiology.	3	3	3	3	2	1	1	3	2.37
		CO2	•Along with outline of clinical presentation and management of these conditions it also includes Medical and Surgical interventions.	3	3	3	3	2	1	1	3	2.37
	Average			3	3	3	3	2	1	1	3	2.37
		CO1	The course is designed to make the student acquire an adequate knowledge of the physiological systems of the human body and relate them to the parameters that have clinical importance.	3	3	3	3	2	1	1	3	2.37
		CO2	• The fundamental principles of equipment that are actually in use at the present day are introduced.	3	3	3	3	2	1	1	3	2.37

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic developme nt	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 4	Medical I nstrumenttion Relevant to Cardiac Care Technology BCCT 118 L	CO3	The course is designed to make the student acquire an adequate knowledge of the physiological systems of the human body and relate them to the parameters that have clinical importance. • The fundamental principles of equipment that are actually in use at the present day are introduced. • To train the student in various recording techniques of the machines which will increase their efficiency in the healthcare industry or they will be the best helping hand for biomedical engineers	3	3	3	3	2	1	1	3	2.37
	Average			3	3	3	3	2	1	1	3	2.37
	Computers and Applications AEC 003 L	CO1	Discuss about health informatics and different IT applications in allied health care.	3	2	2	1	2	1	1	3	1.8
		CO2	• Explain the function of Hospital Information Systems	3	2	2	1	2	1	1	3	1.8
		CO3	• Analyze medical standards	3	2	2	1	2	1	1	3	1.8
	Average			3	2	2	1	2	1	1	3	1.8
	Biostatistics and Research Methodology AEC 004 L	CO1	To understand the importance & Methodology for research	3	2	3	3	2	1	1	3	1.8
		CO2	• To learn in detail about sampling, probability and sampling distribution, significance tests correlation and regression, sample size determination, study design and multivariate analysis.	3	2	3	3	2	1	1	3	1.8
	Average			3	2	3	3	2	1	1	3	1.8
Semester 5	Advanced	CO1	To develop an understanding regarding Echocardiography.	3	3	3	3	2	1	1	3	1.8
		CO2	•To train students to perform Electrocardiography examinations by explaining the position of leads.	3	3	3	3	2	1	1	3	1.8

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 5	Electrocardiography BCCT 120 L	CO3	•To make students aware of recent advances in Electrocardiography.	3	3	3	3	2	1	1	3	1.8
		CO4	•To understand the role of Cardiac Care technician while assisting the Cardiologist as well as when performing individually.	3	3	3	3	2	1	1	3	1.8
	Average			3	3	3	3	2	1	1	3	1.8
	Advanced Echocardiography BCCT 121 L	CO1	To develop an understanding regarding Echocardiography.	3	3	3	3	1	1	1	3	2.2
		CO2	•To train students to perform Echocardiography examinations by explaining the position of transducers.	3	3	3	3	2	1	1	3	2.2
		CO3	•To make students aware of recent advances in Echocardiography.	3	3	3	3	2	1	1	3	2.2
		CO4	•To understand the role of Cardiac Care technician while assisting the Cardiologist as well as when performing individually.	3	3	2	3	2	1	1	3	2.2
	Average			3	3	2	3	2	1	1	3	2.2
	Invasive Cardiology BCCT 122 L	CO1	To enable students to not only be a helping hand to those just starting out in the specialty but also to serve as a reference for those who have been working in Invasive field for some time	3	3	3	3	2	1	1	3	2.2
	Average			3	3	3	3	2	1	1	3	2.2
	Basics of Clinical Skill Learning CEC 005 L	CO1	After successful accomplishment of the course, the students would be able to Measure Vital Signs, do basic physical Examination of the patients, NG tube basics, Administration of Medicines..	3	3	2	2	2	2	2	3	2.3
		CO2	•The students will learn about Asepsis, and the Cleanliness related to asepsis and on mobility of the patients	3	3	2	2	2	2	2	3	2.3
	Average			3	3	2	2	2	2	2	3	2.3

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 5	Hospital Operation Management CEC 006 L	CO1	Understand and apply resource management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors.	3	3	3	1	1	2	1	3	2.1
		CO2	•Communicate effectively and develop their leadership and teambuilding abilities	3	3	3	1	1	2	1	3	2.1
		CO3	•Apply modern change management and innovation management concepts to optimize structures	3	3	3	1	1	2	1	3	2.1
		CO4	•Analyze existing hospital service policies and enhance their alignment within the local and national context	3	3	3	1	1	2	1	3	2.1
	Average			3	3	3	1	1	2	1	3	2.1
Semester 6	Cardiac Catheterization BCCT 124 L	CO1	The students will gain knowledge about chances of a successful procedure.	3	3	3	2	2	1	1	3	2.2
		CO2	•To enable students, understand about benefit/risk to the patient if the procedure is successful/ unsuccessful	3	3	3	2	2	1	1	3	2.2
		CO3	•The occurrence and management of various complications.	3	3	3	2	2	1	1	3	2.2
	Average			3	3	3	2	2	1	1	3	2.2

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 6	Pediatric Interventions BCCT 125 L	CO1	The students will gain knowledge through proper assessment and integration of the history, physical examination, electrocardiogram, and chest X-ray, the type of problem can be diagnosed correctly in many patients, and the severity and hemodynamics correctly estimated. •The occurrence and management of various complications in Pediatric cardiology interventions S	3	3	3	2	3	2	2	3	2.8
		CO2	•The occurrence and management of various complications in Pediatric cardiology interventions	3	3	3	2	3	2	2	3	2.8
	Average			3	3	3	2	3	2	2	3	2.8

MAPPING AVERAGE										
Programe - B.Sc Cardic Care Technology										
Semester	**Subject**	**PO1**	**P02**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	Average
Semester 3	Applied Anatomy, Physiology, Pharmacology in Cardiac Care BCCT 112 L	3.0	2.0	1.8	1.3	2.0	1.0	2.0	2.5	2.6
	Basic Electrocardiography BCCT 113 L	3	2	2	1	1	1	3	3	2
	Basic Echocardiography BCCT 114 L	3	3	2.3	1.5	2	1	1	3	16.8
	Pursuit of inner self excellence GEC 001 L	3	2	2	1	2	2	2	2	2
	Organizational Behavior GEC 002 L	3	3	2	1	2	2	1.6	3	1.9
Semester 4	Development of Cardiovascular System: Fetal and Neonatal BCCT 116 L	3	2	3	3	2	1	1	3	2.2
	Cardiovascular Diseases pertaining to Cardiac Care Technology	3	3	3	3	2	1	1	3	2.37
	Medical I nstrumenttion Relevant to Cardiac Care Technology BCCT 118 L	3	3	3	3	2	1	1	3	2.37
	Computers and Applications AEC 003 L	3	2	2	1	2	1	1	3	1.8
	Biostatistics and Research Methodology AEC 004 L	3	2	3	3	2	1	1	3	1.8
Semester 5	Advanced Electrocardiography BCCT 120 L	3	3	3	3	2	1	1	3	1.8
	Advanced Echocardiography BCCT 121 L	3	3	2	3	2	1	1	3	2
	Invasive Cardiology BCCT 122 L	3	3	3	3	2	1	1	3	2

Semester 5	Basics of Clinical Skill Learning CEC 005 L	3	3	2	2	2	2	2	3	2
	Hospital Operation Management CEC 006 L	3	3	3	1	1	2	1	3	2
Semester 6	Cardiac Catheterization BCCT 124 L	3	3	3	2	3	2	2	3	3
	Pediatric Interventions BCCT 125 L	3	3	3	2	3	2	2	3	3

CO & PO Relationships (Mapping Strength)

Programe - B.Sc Cardic Care Technology

Semester - Semester III, IV, V & VI

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 3	Applied Anatomy, Physiology, Pharmacology in Cardiac Care BCCT 112 L	CO1	To understand Coronary Anatomy	PO1, PO2	C,A	1,2	15	25	0	0	0	0	15	13%	1
		CO2	To enable students, differentiate between normal heart sounds and murmurs	PO1, PO3,PO8	C,A	3,	10	17%			0	0	10	8%	1
		CO3	To enable students, a preliminary understanding of the circulatory system from a physiological and functional perspective, as well as related terminologies.	PO1	C,A	1,2,4	15	25			0	0	15	13%	1
		CO4	Students will be proficient in Pharmacology with proficient knowledge about the different drugs / medicines to be given in various cardiovascular diseases, dose calculation and mode of administration. •	PO1	C,A	7,8,9	20	33			0	0	20	17%	2
		CO5	Also recent advances in pharmacology will play a key role in research aspect of the students.	PO1,PO8	C,A	0,	10	0			0	0	10	8%	1
							60	100%			0	0	60	100%	
	Basic Electrocardiography BCCT 113 L	CO1	To develop understanding regarding Electrocardiography and its procedure.	PO1, PO2,PO3,P08	C,A,P	1,2,	20	44%		0	10	33%	30	35%	2
		CO2	•Describe the proper hook-up procedure for a 12-Lead ECG	PO1,PO7,PO8	C,A,P	2	5	11.1111111			10	33%	15	18%	1
		CO3	Identify basic normal ECG waveform morphology and common interpretation.	PO1,PO7,PO8	C,A,P	4,5,6,7	20	44.4444444			10	33%	30	35%	2
		CO4	•Enumerate the measures to be taken before, after and during ECG procedure	PO1,PO7,PO8	C,A,P	0					10	33%	10	12%	1
							45	100%			40	100%	85	100%	
	Basic Echocardiography BCCT 114 L	CO1	To develop an understanding regarding Echocardiography.	PO1, PO2,PO3,P08,P O10,PO11	C,A,P	1,3,4,6	10	33.3333333	0	0	15	25%	25	28%	1
		CO2	To train students to perform Echocardiography examinations by explaining the position of transducers.	PO1,PO&,PO8	C,A,P	1,4	4	13%			15	25%	19	21%	1
		CO3	•To make students aware of recent advances in Echocardiography.	PO1,PO7,PO8	C,A,P	8	3	10			15	25%	18	20%	1
		CO4	•To understand the role of Cardiac Care technician while assisting the Cardiologist in performing the procedure	PO1,PO7,PO8	C,A,P	5,7,9,11,13	13	43			15	25%	28	31%	2
							30	100%			60	100%	90	100%	
	Pursuit of Inner Self Excellence (POIS)	CO1	Students will become self dependent, more decisive and develop intuitive ability for their study and career related matter.	PO1	C,A	1,2	8	18%		0	0	0	8	9%	1
		CO2	Student's ability to present their ideas will be developed.	PO1	C,A	2,3	7	16%		0	0	0	7	8%	1
		CO3	•Enhanced communication skills, public speaking & improved Presentation ability.	PO1	C,A	3,4	8	18%		0	0	0	8	9%	1
		CO4	• Students will be able to explore their inner potential and inner ability to become a successful researcher or technician & hence become more focused.	PO1	C,A	1,4	7	16%		0	0	0	7	8%	1
		CO5	• Students will observe significant reduction in stress level.	PO1	C,A	2,4	8	18%		0	0	0	8	9%	1
		CO6	• With the development of personal attributes like Empathy, Compassion, Service, Love & brotherhood, students will serve the society and industry in better way with teamwork and thus grow professionally.	PO1	C,A	1,3	7	16%		0	0	0	7	8%	1
							45	100%			0	0	45	100%	

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 3	Organizational Behavior GEC 002 L	CO1	Describe and apply motivation theories to team and organizational scenarios in order achieve a team's or an organization's goals and objectives.	PO1,PO2,PO8	C,A	5	6	13.3333333			0	0	6	13%	1
		CO2	• Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviours in team and organizational settings.	PO1,PO2,PO8	C,A	4,6,7	19	42.2222222			0	0	19	42%	2
		CO3	• Explain types of teams and apply team development, team effectiveness, and group decision making models and techniques. Analyse and apply leadership theories and better understand their own leadership style	PO1,PO2,PO8	C,A	2,7	8	17.7777778			0	0	8	18%	1
							45	100			0	0	45	100%	
Semester 4	Development of Cardiovascular system: Fetal and Nonetal BCCT 117 L	CO1	This course will provide overall information of the structural development of the cardiovascular system.	PO1,PO3,PO4,PO8,	C,A	1,2,3,4,5,6,7,8	35	78%	0	0	0	0	35	78%	3
		CO2	•To encourage student to apply this knowledge to understand developmental anomalies in Cardiovascular System.	PO1,PO3,PO4,PO8,	C,A	5,6,7,8	10	22%			0	0	10	22%	1
							45	100			0	0	45	100%	
	Cardiovascular diseases pertaining to CCT BCCT 118 L	CO1	This course will cover common Cardiovascular Diseases, their related pathology and microbiology.	PO1 ,PO3,PO4,PO8	C,A	2,3,4,5,6,7,8,9	25	55.5555556	0	0	0	0	25	56%	3
		CO2	•Along with outline of clinical presentation and management of these conditions it also includes Medical and Surgical interventions.	PO1,PO3,PO4,PO8	C,A	2,3,4,5,6,7,8,9	20	44.4444444			0	0	20	44%	2
							45	100					45	100%	
	Medical Instrumentation relevant to Cardiac Care BCCT 119 L	CO1	The course is designed to make the student acquire an adequate knowledge of the physiological systems of the human body and relate them to the parameters that have clinical importance.	PO1,PO2,PO3,PO4,PO8	C,A,P	1' -5	20	66.6666667	0	0	20	33%	40	44%	2
		CO2	• The fundamental principles of equipment that are actually in use at the present day are introduced.	1,PO2,PO3,PO4,P	C,A,P	2	5	16.6666667	0	0	20	33%	25	28%	1
		CO3	The course is designed to make the student acquire an adequate knowledge of the physiological systems of the human body and relate them to the parameters that have clinical importance. • The fundamental principles of equipment that are actually in use at the present day are introduced. • To train the student in various recording techniques of the machines which will increase their efficiency in the healthcare industry or they will be the best helping hand for biomedical engineers	1,PO2,PO3,PO4,P	C,A,P	4, 5	5	16.6666667	0	0	20	33%	25	28%	1
							30	100			60	100%	90	100%	
	Computer and applications AEC 003 L	CO1	Discuss about health informatics and different IT applications in allied health care.	PO1,PO8	C,A	11,12	30	67%			0	0	30	29%	1
		CO2	• Explain the function of Hospital Information Systems	PO1,PO8	C,A	9	5	11%			0	0	5	5%	1
		CO3	• Analyze medical standards	PO1,PO8	C,A	10,12	10	22%			0	0	10	10%	1
							45	100%					45	100%	
	Biostatistics and Research Methodology AEC 004 L	CO1	To understand the importance & Methodology for research	PO1,PO3,PO4,PO	C,A	4,5	20	44%			0	0	20	19%	1

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 4	Biostatistics and Research Methodology AEC 004 L	CO2	• To learn in detail about sampling, probability and sampling distribution, significance tests correlation and regression, sample size determination, study design and multivariate analysis.	PO1,PO3,PO4,PO	C,A	6,7,8	25	55%			0	0	25	24%	1
							45	100%			0	0	45	100%	
Semester 5	Advanced Electrocardiography BCCT 121 L	CO1	To develop an understanding regarding Echocardiography.	PO1,PO2,PO3,PO4,PO8	C,A,P	1,2	8	26.60%			15	33%	23	26%	1
		CO2	•To train students to perform Electrocardiography examinations by explaining the position of leads.	PO1,PO2,PO3,PO4,PO8	C,A,P	2,3	8	26.60%			15	33%	23	26%	1
		CO3	•To make students aware of recent advances in Electrocardiography.	PO1,PO2,PO3,PO4,PO8	C,A,P	3,4	8	27%			15	33%	23	26%	1
		CO4	•To understand the role of Cardiac Care technician while assisting the Cardiologist as well as when performing individually.	PO1,PO2,PO3,PO4,PO8	C,A,P	5	6	20%			15	33%	21	23%	1
							30	100%			60	100%	90	100%	
	Advanced Echocardiography BCCT 121 L	CO1	To develop an understanding regarding Echocardiography.	PO1,PO2,PO3,PO4,PO8	C,A,P	1,2	7	20%			12	20	19	21%	1
		CO2	•To train students to perform Echocardiography examinations by explaining the position of transducers.	PO1,PO2,PO3,PO4,PO8	C,A,P	2,3	8	20%			12	20	18	20%	1
		CO3	•To make students aware of recent advances in Echocardiography.	PO1,PO2,PO3,PO4,PO8	C,A,P	3,4	7	20%			12	20	19	21%	1
		CO4	•To understand the role of Cardiac Care technician while assisting the Cardiologist as well as when performing individually.	PO1,PO2,PO3,PO4,PO8	C,A,P	4,5	8	20%			12	20	18	20%	1
							30	100%			60	100	90	100%	
	Invasive Cardiology BCCT 122 L	CO1	To enable students to not only be a helping hand to those just starting out in the specialty but also to serve as a reference for those who have been working in Invasive field for some time	PO1,PO2,PO3,PO4,PO8	C,A	1-10.	8	18.00%					8	18%	1
							45	100%					45	100%	
	Basics of Clinical Skill Learning CEC 005 L	CO1	After successful accomplishment of the course, the students would be able to Measure Vital Signs, do basic physical Examination of the patients, NG tube basics, Administration of Medicines..	PO1,PO2,PO8	C,A	1,2,3	23	51%					23	51%	3
		CO2	•The students will learn about Asepsis, and the Cleanliness related to asepsis and on mobility of the patients	PO1,PO2,PO8	C,A	4,5,6	22	49%					22	48%	2
							45	100%					45	100%	
Semester 6	Hospital Operation Management CEC 006 L	CO1	Understand and apply resource management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors.	PO1,PO2,PO3,PO	C,A	1,2	11	24.4444444			0	0	11	10%	1
		CO2	•Communicate effectively and develop their leadership and teambuilding abilities	PO1,PO2,PO3,PO	C,A	2,3	11	24.4444444			0	0	11	10%	1
		CO3	•Apply modern change management and innovation management concepts to optimize structures	PO1,PO2,PO3,PO	C,A	4,5	11	24.4444444			0	0	11	10%	1
		CO4	•Analyze existing hospital service policies and enhance their alignment within the local and national context	PO1,PO2,PO3,PO	C,A	1,5	12	26.6666667			0	0	12	11%	1
							45	100%			0	0	45	43%	
	Cardiac Catheterization BCCT 124 L	CO1	The students will gain knowledge about chances of a successful procedure.	PO1,PO2,PO3,PO	C,A,P	1,2	10	33.33%			20	33.33%	30	33%	2

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 6	Cardiac Catheterization BCCT 124 L	CO2	•To enable students, understand about benefit/risk to the patient if the procedure is successful/ unsuccessful	PO1,PO2,PO3,PO	C,A,P	2,3	10	33.33%			20	33.33%	30	33%	2
		CO3	•The occurrence and management of various complications.	PO1,PO2,PO3,PO	C,A,P	3,4	10	33.33%			20	33.33%	30	33%	2
							30	100%			60	100	90	100%	
	Pediatric interventions BCCT 125 L	CO1	The students will gain knowledge through proper assessment and integration of the history, physical examination, electrocardiogram, and chest X-ray, the type of problem can be diagnosed correctly in many patients, and the severity and hemodynamics correctly estimated. •The occurrence and management of various complications in Pediatric cardiology interventions S	1,PO2,PO3,PO5,P	C,A,P	1,2,3	15	50			30	50%	45	50%	2
		CO2	•The occurrence and management of various complications in Pediatric cardiology interventions	1,PO2,PO3,PO5,P	C,A,P	4,5,6	15	50			30	50%	45	50%	2
							30	100%			60	100	90	100	

CO PO MAPPING (Matrix)

Programe - B.Sc Dialysis Care Technology

Semester - Smester III, IV, V & VI

PO1 – Knowledge & Skill Development- An ability to apply knowledge of healthcare technology (including clinical subjects, investigations/ Procedures, handling instruments)

PO2 – Critical Thinking – To apply professional judgment and rational thinking in decision-making

PO3 - Problem solving – Correlation of professional knowledge applied to current clinical or healthcare practices.

PO4 -Professional ethics – To adopt and apply code of ethics prescribed by professional bodies in professional and social context. Maintain appropriate boundaries with patients and care givers and maintain confidentiality.

PO5 – Communication skills – To communicate effectively with the patients, care givers and other healthcare professional for addressing patient related issues and to deliver and information

PO6 – Individual / Team work - ability to function on multi-disciplinary teams

PO 7- Holistic development: Development of intellectual mental, Physical, Emotional & Social abilities, so as to be capable of facing the demands & challenges of every day life.

PO8 – Lifelong learning - To develop continuous learning attitude in context of research, advances in clinical practices and to inculcate professionalism and evidence based practices

PO Mapping same with correlation level 3,2,1 The notation of 1 - low, 2 - moderate , 3 - high

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
B.Sc. MDT Semester III	Introduction To Dialysis MDT 112 L	CO1	Practice personal safety & standard precautions.	3.0	3.0	3.0	1.0	1.0	1.0	1.0	2.0	1.9
		CO2	Handling complications during dialysis procedures.	3.0	3.0	3.0	1.0	1.0	1.0	1.0	2.0	1.9
		CO3	Understand Infectious diseases, mode of transmission, prevention & care of the patient in a Dialysis Unit.	3.0	3.0	3.0	1.0	1.0	1.0	1.0	2.0	1.9
	Average			3.0	3.0	3.0	1.0	1.0	1.0	1.0	2.0	1.9
	Fundamentals of Dialysis BMDT 113 L	CO1	Practice personal safety & standard precautions.	3.0	3.0	3.0	1.0	1.0	1.0	1.0	2.0	1.9
		CO2	Handling complications during dialysis procedures.	3.0	3.0	3.0	1.0	1.0	1.0	1.0	2.0	1.9
		CO3	Understand Infectious diseases, mode of transmission, prevention & care of the patient in a Dialysis Unit.	3.0	3.0	3.0	1.0	1.0	1.0	1.0	2.0	1.9
	Average			3.0	3.0	3.0	1.0	0.0	0.0	1.0	3.0	1.8
	Pharmacology in Dialysis BMDT 114 L	CO1	Understand the basic concepts of pharmacology	3.0	3.0	3.0	2.0	3.0	2.0	2.0	3.0	2.6
		CO2	Understand the pharmacology of common chemotherapeutics	3.0	3.0	3.0	2.0	0.0	2.0	0.0	3.0	2.0
		CO3	Understand common antiseptics, disinfectants and insecticides.	3.0	3.0	3.0	2.0	3.0	2.0	2.0	3.0	2.6
		CO4	Understand drug acting on various systems of human body.	3.0	3.0	3.0	2.0	0.0	2.0	0.0	3.0	2.0

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
B.Sc. MDT Semester III		CO5	Understand alternative systems of medicines.	3.0	3.0	3.0	2.0	3.0	2.0	2.0	3.0	2.6
	Average			3.0	3.0	3.0	2.0	3.0	2.0	2.0	3.0	2.0
	Pursuit of Inner Self Excellence (POIS) GEC 001 L	CO1	Students will become self dependent, more decisive and develop intuitive ability for their study and career related matter.	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
		CO2	Student's ability to present their ideas will be developed	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
		CO3	Enhanced communication skills, public speaking & improved Presentation ability.	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
		CO4	Students will be able to explore their inner potential and inner ability to become a successful researcher or technician & hence become more focused	2.0	2.0	3.0	2.0	2.0	2.0	2.0	2.0	2.1
		CO5	Students will observe significant reduction in stress level.	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
		CO6	With the development of personal attributes like Empathy, Compassion, Service, Love & brotherhood, students will serve the society and industry in better way with teamwork and thus grow professionally.	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	1.9
	Average			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	Organizational Behavior GEC 002 L	CO1	Describe and apply motivation theories to team and organizational scenarios in order achieve a team's or an organization's goals and objectives	1.0	2.0	1.0	1.0	1.0	3.0	1.0	3.0	1.6
		CO2	Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviors in team and organizational settings.	1.0	2.0	2.0	1.0	3.0	3.0	1.0	3.0	2.0

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
B.Sc. MDT Semester III		CO3	Explain types of teams and apply team development, team effectiveness, and group decision making models and techniques. Analyze and apply leadership theories and better understand their own leadership style.	1.0	2.0	2.0	1.0	2.0	3.0	1.0	3.0	1.9
	Average			2.0	2.0	1.7	1.0	2.0	3.0	1.0	3.0	1.8
Semester IV	Concept of Renal Disease & Disorders BMDT 116 L	CO1	To develop understanding regarding different disorder and its management.	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.9
		CO2	To develop knowledge in childhood anomalies' and it's significance.	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.9
	Average			3.0	3.0	0.0	0.0	2.0	0.0	0.0	1.0	1.1
	Nutrition in Dialysis BMDT 117 L	CO1	To describe basic nutrient and their role in growth, development, health maintained and restoration.	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.9
		CO2	To identify and interpret appropriate dietary plan for dialysis patient.	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.9
	Average			3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.9
	Computers and Applications AEC 003 L	CO1	Discuss about health informatics and different IT applications in allied health care.	2.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.8
		CO2	Explain the function of Hospital Information Systems Analyze medical standards	2.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.8
		CO3	Analyze medical standards	2.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	
	Average			2.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.8
	Biostatistics and Research Methodology AEC 004 L	CO1	To understand the importance & Methodology for research	2.0	2.0	1.0	1.0	1.0	0.0	0.0	2.0	1.1
		CO2	To learn in detail about sampling, probability and sampling distribution, significance tests correlation and regression, sample size determination, study design and multivariate analysis.	2.0	2.0	1.0	1.0	1.0	0.0	0.0	2.0	1.1
	Average			2.0	2.0	1.0	1.0	1.0	0.0	0.0	2.0	1.1

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester V	Applied Dialysis Technology – I BMDT 120 L	CO1	Know the History	3.0	3.0	3.0	3.0	1.0	0.0	1.0	3.0	2.1
		CO2	Describes the anatomy and Physiology	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		CO3	Performs Physiological principles of Dialysis	3.0	3.0	3.0	3.0	1.0	0.0	1.0	3.0	2.1
		CO4	Demonstrated Procedures as Venepuncture, Cannulisation and maintenance of Sterilization of Equipment's and Dialysis Unit	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		CO5	Demonstrate maintenance of Records and Reports	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Average			3.0	3.0	3.0	3.0	2.0	1.5	2.0	3.0	2.6
	Advance Dialysis Technology – I BMDT 121 L	CO1	Practice and perform independently the water maintenance for the Hemodialysis room	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	2.9
		CO2	•Independently maintain the Hemodialysis machine with respect to disinfection and priming	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	2.9
	Average			3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	2.9
	Basics of Clinical Skill Learning CEC 005 L	CO1	After successful accomplishment of the course, the students would be able to Measure Vital Signs, do basic physical Examination of the patients, NG tube basics, Administration of Medicines	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.9
		CO2	The students will learn about Asepsis, and the Cleanliness related to asepsis and on mobility of the patients	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.9
	Average			3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.9
	Hospital Operation Management	CO1	Understand and apply resource management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors.	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
		CO2	Communicate effectively and develop their leadership and teambuilding abilities	2.0	2.0	2.0	2.0	3.0	1.0	2.0	2.0	2.0

Semester	Course / Course Code	Course Outecome	Details	Knowledge & Skill Development	Critical Thinking	Problem solving	Professional ethics	Communication skills	Individual / Team work	Holistic development	Lifelong learning	Average
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
Semester V	Management CEC 006 L	CO3	Apply modern change management and innovation management concepts to optimize structures	2.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	1.9
		CO4	Analyze existing hospital service policies and enhance their alignment within the local and national context	2.0	2.0	2.0	2.0	1.0	1.0	2.0	2.0	1.8
	Average			2.0	2.0	2.0	2.0	2.0	1.3	2.0	2.0	1.9
Semester VI	Applied Dialysis Technology II BMDT 123 L	CO1	Train patients in performing peritoneal dialysis, and personal care.	3.0	3.0	3.0	3.0	2.0	3.0	2.0	2.0	2.6
		CO2	Practice personal safety & standard precautions	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		CO3	Handling complications during dialysis procedures	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		CO4	Maintain quality and safety	3.0	3.0	3.0	3.0	2.0	3.0	2.0	2.0	2.6
	Average			3.0	3.0	3.0	3.0	2.7	3.0	2.7	2.7	2.9
	Advance Dialysis Technology II BMDT 124 L	CO1	Demonstrate Knowledge about Advancements in Renal Dialysis and in renal therapies	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		CO2	Demonstrate peritoneal dialysis, and its self care	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	2.8
		CO3	Involves family centered approach while providing patient care	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	2.8
		CO4	Handling complications during dialysis procedures.	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	2.8
	Average			3.0	3.0	3.0	3.0	2.3	3.0	3.0	2.3	2.8

MAPPING AVERAGE										
Programe - B.Sc Dialysis Care Technology										
Semester	**Subject**	**PO1**	**P02**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**Average**
Semester 3	Introduction To Dialysis	3.0	3.0	3.0	1.0	1.0	1.0	1.0	2.0	1.9
	Fundamentals of Dialysis	3.0	3.0	3.0	1.0	0.0	0.0	1.0	3.0	1.8
	Pharmacology in Dialysis	3.0	3.0	3.0	2.0	3.0	2.0	2.0	3.0	2.0
	Pursuit of Inner Self Excellence (POIS)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	Organizational Behavior	2.0	2.0	1.7	1.0	2.0	3.0	1.0	3.0	1.8
Semester 4	Concept of Renal Disease & Disorders	3.0	3.0	0.0	0.0	2.0	0.0	0.0	1.0	1.1
	Nutrition in Dialysis	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.9
	Computer and Applications	2.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0
	Biostatistics and Research Methodology	2.0	2.0	1.0	1.0	1.0	0.0	0.0	2.0	1.1
Semester 5	Applied Dialysis Technology – I	3.0	3.0	3.0	3.0	0.5	0.0	0.0	2.0	1.6
	Advance Dialysis Technology – I	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	2.9
	Basics of Clinical Skills Learning	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.2
	Hospital Operation Management	2.0	2.0	2.0	2.0	1.6	1.5	2.0	2.5	1.9
Semester 6	Applied Dialysis Technology II	3.0	3.0	3.0	3.0	1.8	3.0	2.5	2.8	2.1
	Advance Dialysis Technology II	3.0	3.0	3.0	3.0	1.7	3.0	3.0	2.6	2.1

CO & PO Relationships (Mapping Strength)

Programe - B.Sc Dialysis Care Technology

Semester - Semester III, IV, V & VI

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester III	Introduction To Dialysis MDT 112 L	CO1	Practice personal safety & standard precautions.	1,2,3,8	C	1, 5	17	42	10	33	10	33	37	82	2
		CO2	Handling complications during dialysis procedures.	1,2,3	C	2, 4	18	58	10	33	10	33	38	84	3
		CO3	Understand Infectious diseases, mode of transmission, prevention & care of the patient in a Dialysis Unit.	1,2,3,8	C	3	10	42	10	33	10	33	30	67	2
	Average						45	100	30	50	30	50	105	100	
	Fundamentals of Dialysis BMDT 113 L	CO1	Practice personal safety & standard precautions.	1,2,3,8	C	1,2	15	33	10	33	10	33	35	33	3
		CO2	Handling complications during dialysis procedures.	1,2,3,8	C	3,4	10	22	10	33	10	33	30	29	
		CO3	Understand Infectious diseases, mode of transmission, prevention & care of the patient in a Dialysis Unit.	1,2,3,8	C	4,5	20	44	10	33	10	33	40	38	
	Average						45	100	30	50	30	50	105	100	
	Pharmacology in Dialysis BMDT 114 L	CO1	Understand the basic concepts of pharmacology	1,2,3	C.P	3	20	44	0	0	40	40	60	100	3
		CO2	Understand the pharmacology of common chemotherapeutics	1,2,3	C.P	1,2	25	56	0	0	20	20	45	75	3
		CO3	Understand common antiseptics, disinfectants and insecticides.												
		CO4	Understand drug acting on various systems of human body.												
		CO5	Understand alternative systems of medicines.												
	Average						45	100	0	0	60	100	105	100	
	Pursuit of Inner Self Excellence (POIS) GEC 001 L	CO1	Students will become self dependent, more dability for their study and career related matter.ecisive and develop intuitive	1,4,5,8	C.A								0	0	
		CO2	Student's ability to present their ideas will be developed.	1,4,8	C.A								0	0	
		CO3	Enhanced communication skills, public speaking & improved Presentation ability.	1,5,	C.A								0	0	
		CO4	Students will be able to explore their inner potential and inner ability to become a successful researcher or technician & hence become more focused.	1,5	A								0	0	
		CO5	Students will observe significant reduction in stress level.	7	A								0	0	
		CO6	With the development of personal attributes like Empathy, Compassion, Service, Love & brotherhood, students will serve the society and industry in better way with teamwork and thus grow professionally.	7	C.A								0	0	
	Average												0	0	
	Organizational Behavior GEC 002 L	CO1	Describe and apply motivation theories to team and organizational scenarios in order achieve a team's or an organization's goals and objectives.	4,6	A	1,5	12	27	0	0	0	0	12	20	1
		CO2	Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviors in team and organizational settings.	4	C.A	2,3,4	20	44	0	0	0	0	20	33	2
		CO3	Explain types of teams and apply team development, team effectiveness, and group decision making models and techniques.	6	C.A	6,7	13	29	0	0	0	0	13	22	1
	Average						45	100	0	0	0	0	45	75	

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester IV	Concept of Renal Disease & Disorders BMDT 116 L	CO1	To develop understanding regarding different disorder and its management.	1,2,3,4,5	CAP	1,2,3,4,5	30	50	7	47	7	47	44	49	3
		CO2	To develop knowledge in childhood anomalies' and it's significance.	6,7,8	CAP	6,7,8,9	30	50	8	53	8	53	46	51	
	Average						60	100	15	50	15	50	90	100	
	Nutrition in Dialysis BMDT 117 L	CO1	To describe basic nutrient and their role in growth, development, health maintained and restoration.	1,2,3,5,6	C	1,2,3	25	56	0	0	0	0	25	56	3
		CO2	To identify and interpret appropriate dietary plan for dialysis patient.	7,8,9	C	4,5,6	20	44	0	0	0	0	20	44	
	Average						45	100	0	0	0	0	45	100	
	Computers and Applications AEC 003 L	CO1	Discuss about health informatics and different IT applications in allied health care.	1,8	C	1,2,3,4,5,6,7,8	31	69	0	0	0	0	31	52	3
		CO2	Explain the function of Hospital Information Systems Analyze medical standards	4,6	C	9,10,11,12	14	31	0	0	0	0	14	23	1
	Average						45	100	0	0	0	0	45	75	
	Biostatistics and Research Methodology AEC 004 L	CO1	To understand the importance & Methodology for research	1,4,8	C	1,2,3,4	20	44	0	0	0	0	20	33	2
		CO2	To learn in detail about sampling, probability and sampling distribution, significance tests correlation and regression, sample size determination, study design and multivariate analysis.	1	C	5,6,7,8,9	25	56	0	0	0	0	25	42	2
	Average						45	100	0	0	0	0	45	75	
Semester V	Applied Dialysis Technology – I BMDT 120 L	CO1	Know the History	1,2,6,8	C.A.P	1	10	17	6	10	6	10	22	18	3
		CO2	Describes the anatomy and Physiology	1,2,3,5,6	C.A.P	2	8	13	6	10	6	10	20	17	3
		CO3	Performs Physiological principles of Dialysis	1,3,5,7	CAP	3	8	13	6	10	6	10	20	17	
		CO4	Demonstrated Procedures as Venepuncture, Cannulisation and maintenance of Sterilization of Equipment's and Dialysis Unit	2,4,6,8	CAP	4,5	26	43	6	10	6	10	38	32	
		CO5	Demonstrate maintenance of Records and Reports	1,2,3,5,8	CAP	6,7	8	13	6	10	6	10	20	17	
	Average						60	100	30	50	30	50	120	100	
	Advance Dialysis Technology – I BMDT 121 L	CO1	Practice and perform independently the water maintenance for the Hemodialysis room	1,2,3,5,6	C.A.P	1,2,3	32	53	15	25	15	25	62	52	3
		CO2	Independently maintain the Hemodialysis machine with respect to disinfection and priming	7,8	CAP	4,5,6	28	47	15	25	15	25	58	48	
	Average						60	100	30	50	30	50	120	100	
	Basics of Clinical Skill Learning CEC 005 L	CO1	After successful accomplishment of the course, the students would be able to Measure Vital Signs, do basic physical Examination of the patients, NG tube basics, Administration of Medicines	1,3,5,6,8	C.A.P	1,2,3,4	.	78	0	0	0	0	#VALUE!	#VALUE!	3
		CO2	The students will learn about Asepsis, and the Cleanliness related to asepsis and on mobility of the patients	1	C.P	5,6	10	22	0	0	0	0	10	17	1
	Average						45	100	0	0	0	0	45	75	
	Hospital Operation Management CEC 006 L	CO1	Understand and apply resource management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors.	4,6	C.P	2	10	22	0	0	0	0	10	17	1
		CO2	Communicate effectively and develop their leadership and teambuilding abilities	6	C.P	1	5	11	0	0	0	0	5	8	1
		CO3	Apply modern change management and innovation management concepts to optimize structures	4	C	4,5	20	44	0	0	0	0	20	33	2

Semester	Course & Course code	CO	CO Detail	CO & PO Relationships	Domain	Unit	Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1:< 30%, Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester V	Hospital Operation Management CEC 006 L	CO4	Analyze existing hospital service policies and enhance their alignment within the local and national context	4,6	C	3	10	22	0	0	0	0	10	17	1
	Average						45	100	0	0	0	0	45	75	
Semester VI	Applied Dialysis Technology II BMDT 123 L	CO1	Train patients in performing peritoneal dialysis, and personal care.	1,2,3,5,6,7,8	C.A.P	1,2	16	27	7	12	8	13	31	26	2
		CO2	Practice personal safety & standard precautions	1,2,3,5,6	C.A.P	3,4	14	23	8	13	7	12	29	24	3
		CO3	Handling complications during dialysis procedures	2,3,5,6	C.A.P	5,6	20	33	7	12	8	13	35	29	3
		CO4	Maintain quality and safety	2,4,6,8	C.A.P	7	10	17	8	13	7	12	25	21	
	Average						60	100	30	50	30	50	120	100	
	Advance Dialysis Technology II BMDT 124 L	CO1	Demonstrate Knowledge about Advancements in Renal Dialysis and in renal therapies	1,3,5,6	C.A.P	1	10	17	7	12	8	13	25	21	2
		CO2	Demonstrate peritoneal dialysis, and its self care	2,3,4,5,7	C.A.P	2	15	25	8	13	7	12	30	25	1
		CO3	Involves family centered approach while providing patient care	4,7	C.A.P	3	10	17	7	12	8	13	25	21	1
		CO4	Handling complications during dialysis procedures.	7,8	C.A.P	4,5	25	42	8	13	7	12	40	33	
	Average						60	100	30	50	30	50	120	100	

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BPO –II University Exam (2020-2021)

Pathology			Orthopaedics & Amputation Surgery			Community Rehabilitation & Disability Prevention			Pharmacology			Biomechanics-II			Psychology & Sociology			Prosthetics-II			Orthotics-II		
Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%
Below 50% (Failed)	5	62	Below 50% (Failed)	7	100	Below 50% (Failed)	2	26	Below 50% (Failed)	6	75	Below 50% (Failed)	0	0	Below 50% (Failed)	5	62	Below 50% (Failed)	1	17	Below 50% (Failed)	1	16
50-59%	3	38	50-59%	0	0	50-59%	3	37	50-59%	2	25	50-59%	2	40	50-59%	3	38	50-59%	4	66	50-59%	1	17
60-69%	0	0	60-69%	0	0	60-69%	3	37	60-69%	0	0	60-69%	3	60	60-69%	0	-	60-69%	1	17	60-69%	4	67
70% and above	0	0	70% and above	0	0	70% and above	0	0	70% and above	0	0	70% and above	0	0	70% and above	0	-	70% and above	0	0	70% and above	0	0

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BPO –III University Exam (2020-2021)

Computer Science & Graphical communication			Biomechanics-III			Assistive Technology			Research Methodology & Biostatistics			Prosthetics-III			Orthotics-III		
Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%
Below 50% (Failed)	0	0	Below 50% (Failed)	2	8	Below 50% (Failed)	0	0	Below 50% (Failed)	1	6	Below 50% (Failed)	1	6	Below 50% (Failed)	0	0
50-59%	2	9	50-59%	4	18	50-59%	4	17	50-59%	6	35	50-59%	6	33	50-59%	2	11
60-69%	13	56	60-69%	6	26	60-69%	12	53	60-69%	10	59	60-69%	6	33	60-69%	7	39
70% and above	8	35	70% and above	11	48	70% and above	7	30	70% and above	0	0	70% and above	5	28	70% and above	9	50

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BPO –IV University Exam (2020-2021)

Prosthetic Science-IV			Orthotic Science-IV			Management & Administration			Prosthetic Clinical Practice			Orthotic Clinical Practice			Project Work		
Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%
Below 50% (Failed)	0	0	Below 50% (Failed)	0	0	Below 50% (Failed)	0	0	Below 50% (Failed)	0	0	Below 50% (Failed)	0	0	Below 50% (Failed)	0	0
50-59%	1	17	50-59%	0	0	50-59%	0	0	50-59%	0	0	50-59%	4	67	50-59%	0	0
60-69%	3	50	60-69%	4	67	60-69%	0	0	60-69%	6	100	60-69%	2	33	60-69%	5	83
70% and above	2	33	70% and above	2	33	70% and above	6	100	70% and above	0	0	70% and above	0	0	70% and above	1	17

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MGM INSTITUTE'S UNIVERSITY DEPARTMENT OF PROSTHETICS & ORTHOTICS
NAVI MUMBAI

CO PO Matrix	
Programe - M.Sc. Biotechnology	
Sem I to IV	
PO1.	Nurture the scientific and/or clinical knowledge and skills for development of industrial applications, health care practices and entrepreneurship.
PO2.	Develop the ability of critical thinking to analyse, interpret problems and to find out systematic approach for solution.
PO3.	Impart decision making capability for handling various circumstances in their respective areas
PO4.	Demonstrate research skills for planning, designing, implementation and effective utilization of research findings for community.
PO5.	Develop an ability to function as an efficientindividual and team player in multidisciplinary sectors for effective outcomes
PO6.	Demonstrate an effective written and oral communication skills to communicate effectively in health care sector, industries,academia and research.
PO7.	Inculcate code of ethics in professional and social circumstances to execute them in daily practices and research inrespective areas of specialization
PO8.	Develop lifelong learning attitude and values for enhancementof professional and social skills for an overall development
PO Mapping same with correlation level 3,2,1 The notation of 1 - low, 2 - moderate , 3 - high	

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 1	Cell Biology	CO1	Describe the structure and function of **cells** including the cell metabolism	2	2	3	3	1	1	1	3	2.0
		CO2	Able to understand Cell signaling and cell to cell interaction	2	3	2	3	1	1	1	2	1.9
		CO3	Use of cells for therepeutics and various biological applications	3	3	3	3	2	2	3	3	2.8
		Average		2.3	2.7	2.7	3.0	1.3	1.3	1.7	2.7	2.2
	Basic Biochemistry	CO1	Outline the structure and function of the biomolecules found in all living organisms	2	2	2	3	1	1	1	3	0.9
		CO2	regulation of various biological activities	3	3	3	3	1	1	1	3	2.3
		Average		2.5	2.5	2.5	3	1	1	1	3	3.2
	Immunology & Immunotechnology	CO1	Identify major components of the immune system at organ, cellular and molecular levels.	3	2	3	3	1	1	1	2	2.0
		CO2	Apply immunologic techniques to solve certain clinical and research problems.	3	3	3	3	1	1	1	3	2.3
		CO3	Regulation of Immune system and its components	3	3	2	3	1	1	1	2	2.0
		Average		3	2.7	2.7	3	1	1	1	2.3	2.1

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 1	Biostatistics & Computer Applications	CO1	Understand the basic concepts of biostatistics and theire application in research	3	2	2	2	1	1	1	3	1.9
		CO2	methods required for a particular research design	2	2	2	3	1	1	1	2	1.8
		CO3	Develop a appropriate framework for research studies and Data Analysis	3	2	2	2	2	1	1	3	2.0
		Average		3	2	2	2.3	1	1	1	2.7	1.9
	Analytical Techniques: Principles And Instrumentation	CO1	To develop analytical and critical thinking skills in biological phenomena through scientific methods	3	3	2	3	1	1	1	3	2.1
		CO2	To conduct the analytical experiments to solve the real world biotechnology problems	3	3	3	3	1	1	1	3	2.3
		CO3	To use the modern equipments and tools for fulfilling research experiment needs	3	2	2	3	1	1	1	3	2.0
		Average		3.0	2.7	2.3	3.0	1.0	1.0	1.0	3.0	2.1
Semester 2	Bioinformatics, Research Methodology & Scientific Writing	CO1	To learn basic concepts of Bioinformatics and its significance in Biological data analysis.	3	2	3	3	1	1	1	3	2.1
		CO2	To get exposed to computational methods, tools and algorithms employed for Biological Data Interpretation	2	2	3	3	1	1	1	2	1.9
		CO3	To apply the different bioinformatics tools to solve the real world problem	3	3	3	3	1	1	1	3	2.3
		Average		2.7	2.3	3.0	3.0	1.0	1.0	1.0	2.7	2.1
	Molecular Biology	CO1	Demonstrate the knowledge of common and advanced laboratory practices in cell and molecular biology	3	3	3	3	1	1	2	3	2.4
		CO2	To utilize the knowledeg of DNA, RNA and Protein to solve the cellular level problems	3	3	3	3	1	1	2	3	2.4

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 2	Molecular Biology	CO3	To get exposed to various gene regulation concepts	2	3	3	3	1	1	1	2	2.0
		Average		2.7	3.0	3.0	3.0	1.0	1.0	1.7	2.7	2.3
	Recombinant Dna Technology	CO1	Acquire skills on techniques of construction of recombinant DNA - Cloning vectors and isolation of gene of interest	3	3	3	3	1	1	3	3	2.5
		CO2	Learning tools and techniques in rDNA technology- DNA manipulative enzymes.	3	3	3	3	1	1	2	3	2.4
		CO3	Learning various application of rDNA technology in evolving plants for resistance to pest and disease, tolerance to herbicides and abiotic factors.	3	3	3	3	1	1	3	3	2.5
		Average		3	3	3	3	1	1	2.7	3	2.5
	Human Genetics	CO1	Employ the scientific method to generate new knowledge, and to solve problems, regarding human heredity	3	3	2	3	1	1	1	3	2.1
		CO2	mechanisms of gene expression control and their role in human	3	2	3	3	1	1	1	3	2.1
		CO3	explain the theoretical and practical basis for the use of modern molecular techniques in the diagnosis and treatment of cancer and inherited disease	3	2	3	3	1	1	1	3	2.1
		Average		3	2.3	2.7	3	1	1	1	3	2.1
	Medical Microbiology	CO1	Able to learn basic microbial structure and similarities and differences among various groups of microorganisms.	3	3	3	3	1	1	1	3	2.3
		CO2	To utilize basic knowledge of Microbiology for Isolation and Identification of microorganisms	3	3	3	3	1	1	1	3	2.3
		CO3	Understand the basic of Infection machanism for Bacteria and Viruses	2	2	2	2	1	1	1	2	1.6
		Average		2.7	2.7	2.7	2.7	1.0	1.0	1.0	2.7	2.0

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 2	Plant Biotechnology	CO1	Learning the basic techniques of the plant tissue culture techniques	3	2	3	3	1	1	1	3	2.1
		CO2	Performing procedures for plant tissue culture techniques for various research activities	3	3	3	3	1	1	1	3	2.3
		CO3	To study the chemistry of Natural products and quality control of Herbal Products	2	2	2	3	1	1	1	3	1.9
		Average		2.7	2.3	2.7	3.0	1.0	1.0	1.0	3.0	2.1
Semester 3	Animal Biotechnology	CO1	Demonstrate knowledge of basic cell culture techniques	3	3	3	3	1	1	3	3	2.5
		CO2	Comprehend basic concepts of establishing animal cell cultures	3	3	3	2	1	1	2	3	2.3
		CO3	To utilize the cell culture techniques for various research activities in cell biology	3	3	3	3	1	1	2	3	2.4
		Average		3.0	3.0	3.0	2.7	1.0	1.0	2.3	3.0	2.4
	Biosafety, Introduction To Quality Assurance, Accreditation & Sop Writing	CO1	Evaluate multiple perspectives concerning bioethical issues and recognize that different value systems may lead to different ethical decisions.	3	2	2	3	1	1	3	3	2.3
		CO2	Recognize the importance of biosafety practices and guidelines in research	3	2	3	3	1	1	2	3	2.3
		CO3	Students will gain awareness about Intellectual Property Rights (IPRs) to take measure for the protecting their ideas and funding	3	3	3	3	1	1	2	3	2.4
		Average		3.0	2.3	2.7	3.0	1.0	1.0	2.3	3.0	2.3
	Nanobiotechnolog Y	CO1	To underst Nanotechnology and Nanobiotechnology and theire applications in Healthcare	3	2	3	3	1	1	1	2	2.0
		CO2	To learn basic concepts of Nanoparticle Productions and theire characterization	3	3	3	3	1	1	1	3	2.3
		CO3	To explore the science of Nanobiotechnlogy for development of Biosensors	3	3	3	3	1	1	1	3	2.3
		Average		3.0	2.7	3.0	3.0	1.0	1.0	1.0	2.7	2.2

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 4	Pursuit Of Innerself Excellence (Poise)	CO1	Students will become self dependent, more decisive and develop intuitive ability for their study and career related matter.	1	2	3	1	3	2	2	3	2.1
		CO2	Enhanced communication skills, public speaking & improved Presentation ability.	2	1	1	1	2	3	2	3	1.9
		CO3	Development of personal attributes like Empathy, Compassion, Service, Love, brotherhood and Team work abilities	1	1	1	1	3	3	3	3	2.0
		Average		1.3	1.3	1.7	1.0	2.7	2.7	2.3	3.0	2.0
	Disaster Management And Mitigation Resources	CO1	Understand the world-wide distribution of hazards and disasters and know the similarities and differences between natural and technological disasters.	2	2	3	2	2	1	2	3	2.1
		CO2	Acquire mitigation skills that help communities reduce the amount of damage and loss from disaster.	2	2	1	1	2	1	2	2	1.6
		CO3	Gain preparedness skills that increase community effectiveness in responding to disaster.	2	2	2	1	2	1	2	3	1.9
		Average		2.0	2.0	2.0	1.3	2.0	1.0	2.0	2.7	1.9
	Human Rights	CO1	Demonstrate a good understanding of the provisions under the Constitution of India dealing with human rights.	2	2	2	1	1	1	3	3	1.9
		CO2	Promote human rights through legal as well as non-legal means.	2	2	2	1	1	1	3	3	1.9
		CO3	Participate in legal, political and other debates involving human rights in a knowledgeable and constructive way	2	2	2	1	1	1	3	3	1.9
		Average		2.0	2.0	2.0	1.0	1.0	1.0	3.0	3.0	1.9

Mapping Average
Programe - M.Sc. Biotechnology
Sem I to IV

SEMESTER	COURSE	PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8
Semester 1	Cell Biology	2.3	2.7	2.7	3.0	1.3	1.3	1.7	2.7
	Basic Biochemistry	2.5	2.5	2.5	3.0	1.0	1.0	1.0	3.0
	Immunology & Immunotechnology	3.0	2.6	2.6	3.0	1.0	1.0	1.0	2.3
	Biostatistics & Computer Applications	2.6	2.0	2.0	2.3	1.3	1.0	1.0	2.6
	Analytical Techniques: Principles And Instrumentation	3.0	2.7	2.3	3.0	1.0	1.0	1.0	3.0
semester 2	Bioinformatics, Research Methodology & Scientific Writing	2.7	2.3	3.0	3.0	1.0	1.0	1.0	2.7
	Molecular Biology	2.7	3.0	3.0	3.0	1.0	1.0	1.7	2.7
	Recombinant Dna Technology	3.0	3.0	3.0	3.0	1.0	1.0	2.6	3.0
	Human Genetics	3.0	2.3	2.6	3.0	1.0	1.0	1.0	3.0
	Medical Microbiology	2.7	2.7	2.7	2.7	1.0	1.0	1.0	2.7
Semester 3	Plant Biotechnology	2.7	2.3	2.7	3.0	1.0	1.0	1.0	3.0
	Animal Biotechnology	3.0	3.0	3.0	2.7	1.0	1.0	2.3	3.0
	Biosafety, Introduction To Quality Assurance, Accreditation & Sop Writing	3.0	2.3	2.7	3.0	1.0	1.0	2.3	3.0
	Nanobiotechnolog Y	3.0	2.7	3.0	3.0	1.0	1.0	1.0	2.7
Semester 4	Pursuit Of Innerself Excellence (Poise)	1.3	1.3	1.7	1.0	2.7	2.7	2.3	3.0
	Disaster Management And Mitigation Resources	2.0	2.0	2.0	1.3	2.0	1.0	2.0	2.7
	Human Rights	2.0	2.0	2.0	1.0	1.0	1.0	3.0	3.0

PO CO Relationship

Programe - M.Sc. Biotechnology

Sem I to IV

Semester	Course & Course code	CO	Details	CO & PO Relationships	Domain		Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1: <30% , Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 1	Cell Biology	CO1	Describe the structure and function of **cells** including the cell metabolism	1,2,4,8	C	1, 2,3	34	56.7	36	60			70	58.3	3
		CO2	Able to understand Cell signaling and cell to cell interaction	1,2,4,8	C	4.5	20	33.3	0	0			20	17	1
		CO3	Use of cells for therepeutics and various biological applications	1,2,3,4,8	C	6	6	10	24	40			30	25	1
		Total					60	100	60	100			120	100	1.67
	Basic Biochemistry	CO1	Outline the structure and function of the biomolecules found in all living organisms	1,2,4,8,	C	2,3,4,5, 6,7	46	76.7	36	60			82	68.3	3
		CO2	Describe the role of biomolecules for regulation of various biological activities	1,2,3,4,8	C	1,8	14	23.3	24	40			38	31.7	2
		Total					60	100	60	100			120	100	2.5
	Immunology & Immunotechnology	CO1	Identify major components of the immune system at organ, cellular and molecular levels.	1,2,3,4,8	C	1	15	25	24	40			39	32.5	2
		CO2	Apply immunologic techniques to solve certain clinical and research problems.	1,2,3,4,8	C	3	15	25	36	60			51	42.5	2
		CO3	Regulation of Immune system and its components	1,2,4,8	C	2,4	30	50	0	0			30	25	1
		Total					60	100	60	100			120	100	1.7
	Biostatistics & Computer Applications	CO1	Understand the basic concepts of biostatistics and theire application in research	1,2,4,8	C	1,2,3,4, 5,6,9	41	68.3	15	25			56	46.7	3
		CO2	Describe the appropriate statistical methods required for a particular research design	1,2,4,8	C	7,8,10,1 1,12	14	23.3	33	55			47	39.2	2
		CO3	Develop a appropriate framework for research studies and Data Analysis	1,2,4,8	C	13,14,1 5	13	21.7		0			13	10.8	1
		Total					68	113.3	48	80			116	96.7	2

Semester	Course & Course code	CO	Details	CO & PO Relationships	Domain		Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1: <30% , Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
	Analytical Techniques: Principles And Instrumentation	CO1	To develop analytical and critical thinking skills in biological phenomena through scientific methods	1,2,3,4,8	C	2	17	28.3	0	0			17	14.2	1
		CO2	To conduct the analytical experiments to solve the real world biotechnology problems	1,2,3,4,8	C	1,3	23	38.3	36	60			59	49.2	2
		CO3	To use the modern equipments and tools for fulfilling research experiment needs	1,2,3,4,8	C	4,5	20	33.3	24	40			44	36.7	2
		Total					60	100	60	100			120	100	1.7
	Bioinformatics, Research Methodology & Scientific Writing	CO1	To learn basic concepts of Bioinformatics and its significance in Biological data analysis.	1,2,4,8	C	1	10	16.7	24	40			34	28.3	2
		CO2	To get exposed to computational methods, tools and algorithms employed for Biological Data Interpretation	1,2,4,8	C	2.5	30	50	24	40			54	45	2
		CO3	To apply the different bioinformatics tools to solve the real world problem	1,2,4,8	C	3,4	20	33.3	12	20			32	26.7	1
		Total					60	100	60	100			120	100	1.7
	Molecular Biology	CO1	Demonstrate the knowledge of common and advanced laboratory practices in cell and molecular biology	1,2,3,4,8	C	1,2	18	30	36	60			54	45	2
		CO2	To utilize the knowledeg of DNA, RNA and Protein to solve the cellular level problems	1,2,3,4,8	C	3,4,5,6	34	56.7	24	40			58	48.3333	2
		CO3	To get exposed to various gene regulation concepts	1,2,3,4,8	C	7	8	13.3		0			8	6.7	1
		Total					60	100	60	100			120	100	1.7
	Recombinant Dna Technology	CO1	Acquire skills on techniques of construction of recombinant DNA - Cloning vectors and isolation of gene of interest	1,2,3,4,8	C	1,3	22	36.7	12	20			34	28.3	1
		CO2	Learning tools and techniques in rDNA technology- DNA manipulative enzymes.	1,2,3,4,8	C	4	14	23.3	24	40			38	31.7	2

Semester	Course & Course code	CO	Details	CO & PO Relationships	Domain		Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1: <30% , Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 2	Recombinant Dna Technology	CO3	Learning various application of rDNA technology in evolving plants for resistance to pest and disease, tolerance to herbicides and abiotic factors.	1,2,3,4,8	C	2, 5	24	40	24	40			48	40	2
		Total					60	100	60	100			120	100	1.67
	Human Genetics	CO1	Employ the scientific method to generate new knowledge, and to solve problems, regarding human heredity	1,2,3,4,8	C	1,4	18	30	12	20			30	25	2
		CO2	explain the genetic and epigenetic mechanisms of gene expression control and their role in human inherited disease	1,2,3,4,8	C	2,6	20	33	24	40			44	36.7	2
		CO3	explain the theoretical and practical basis for the use of modern molecular techniques in the diagnosis and treatment of cancer and inherited disease	1,2,3,4,8	C	3,5	22	36.7	24	40			46	38.3	2
		Total					60	100	60	100			120	100	2
	Medical Microbiology	CO1	Able to learn basic microbial structure and similarities and differences among various groups of microorganisms.	1,2,3,4,8	C	1,2,3,4,5	27	45	36	60			63	52.5	3
		CO2	To utilize basic knowledge of Microbiology for Isolation and Identification of microorganisms	1,2,3,4,8	C	5,6	12	20	24	40			36	30	2
		CO3	Understand the basic of Infection machanism for Bacteria and Viruses	1,2,3,4,8	C	7,8,9	21	35	0	0			21	17.5	1
		Total					60	100	60	100			120	100	2
	Plant Biotechnology	CO1	Learning the basic techniques of the plant tissue culture techniques	1,2,3,4,8	C	1	15	25	24	40			39	32.5	2
		CO2	Performing procedures for plant tissue culture techniques for various research activities	1,2,3,4,8	C	2	10	16.7	24	40			34	28.3	2
		CO3	To study the chemistry of Natural products and quality control of Herbal Products	1,2,3,4,8	C	3,4,5	35	58.3	12	20			47	39.2	2
		Total					60	100	60	100			120	100	2
Semester 3	Animal Biotechnology	CO1	Demonstrate knowledge of basic cell culture techniques	1,2,3,4,8	C	1,2,3	30	50	24	40			54	45	2

Semester	Course & Course code	CO	Details	CO & PO Relationships	Domain		Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1: <30% , Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 3	Animal Biotechnology	CO2	Comprehend basic concepts of establishing animal cell cultures	1,2,3,4,8	C	4,5	18	30	24	40			42	35	2
		CO3	To utilize the cell culture techniques for various research activities in cell biology	1,2,3,4,8	C	6	12	20	12	20			24	20	1
		Total					60	100	60	100			120	100	1.7
	Biosafety, Introduction To Quality Assurance, Accreditation & Sop Writing	CO1	Evaluate multiple perspectives concerning bioethical issues and recognize that different value systems may lead to different ethical decisions.	1,2,3,4,8	C	1	15	25	0	0			15	25	1
		CO2	Recognize the importance of biosafety practices and guidelines in research	1,2,3,4,8	C	3	15	25	0	0			15	25	1
		CO3	Students will gain awareness about Intellectual Property Rights (IPRs) to take measure for the protecting their ideas and funding	1,2,3,4,8	C	2,4	30	50	0	0			30	50	3
		Total					60	100	0	0			60	100	1.7
	Nanobiotechnolo g Y	CO1	To underst Nanotechnology and Nanobiotechnology and theire applications in Healthcare	1,2,3,4,8	C	1	10	16.7	24	40			34	28	1
		CO2	To learn basic concepts of Nanoparticle Productions and theire characterization	1,2,3,4,8	C	2,3,4	40	66.7	36	60			76	63.3	3
		CO3	To explore the science of Nanobiotechnlogy for development of Biosensors	1,2,3,4,8	C	5	10	16.7	0	0			10	8.3	1
		Total					60	100	60	100			120	100	1.7
Semester 4	Pursuit Of Innerself Excellence (Poise)	CO1	Students will become self dependent, more decisive and develop intuitive ability for their study and career related matter.	2,3,5,6,8	C,A	3	15	25	0	0			15	25	1
		CO2	Enhanced communication skills, public speaking & improved Presentation ability.	2,3,5,6,8	C,A	4	15	25	0	0			15	25	1
		CO3	Development of personal attributes like Empathy, Compassion, Service, Love, brotherhood and Team work abilities	2,3,5,6,8	C,A	1,2	30	50	0	0			30	50	3
		Total					60	100	0	0			60	100	1.7

Semester	Course & Course code	CO	Details	CO & PO Relationships	Domain		Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1: <30% , Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 4	Disaster Management And Mitigation Resources	CO1	Understand the world-wide distribution of hazards and disasters and know the similarities and differences between natural and technological disasters.	1,2,3,5,6,7,8	C,A,P	1,2	23	38.3	0	0			23	38.3	2
		CO2	Acquire mitigation skills that help communities reduce the amount of damage and loss from disaster.	1,2,3,5,6,7,8	C,A,P	5	12	20	0	0			12	20	1
		CO3	Gain preparedness skills that increase community effectiveness in responding to disaster.	1,2,3,5,6,7,8	C,A,P	3,4	25	41.7	0	0			25	41.7	2
		Total					60	100	0	0			60	100	1.7
	Human Rights	CO1	Demonstrate a good understanding of the provisions under the Constitution of India dealing with human rights.	1,2,7,8	C,A	3	12	20	0	0			12	20	1
		CO2	Promote human rights through legal as well as non-legal means.	1,2,7,8	C,A	4	13	21.7	0	0			13	21.7	1
		CO3	Participate in legal, political and other debates involving human rights in a knowledgeable and constructive way	1,2,7,8	C,A	1,2,5	35	58.3	0	0			35	58.3	3
		Total					60	100	0	0			60	100	1.7

CO PO Matrix	
Programe - M.Sc. Molecular Biology	
Sem I to IV	
PO1.	Nurture the scientific and/or clinical knowledge and skills for development of industrial applications, health care practices and entrepreneurship.
PO2.	Develop the ability of critical thinking to analyse, interpret problems and to find out systematic approach for solution.
PO3.	Impart decision making capability for handling various circumstances in their respective areas
PO4.	Demonstrate research skills for planning, designing, implementation and effective utilization of research findings for community.
PO5.	Develop an ability to function as an efficientindividual and team player in multidisciplinary sectors for effective outcomes
PO6.	Demonstrate an effective written and oral communication skills to communicate effectively in health care sector, industries,academia and research.
PO7.	Inculcate code of ethics in professional and social circumstances to execute them in daily practices and research inrespective areas of specialization
PO8.	Develop lifelong learning attitude and values for enhancementof professional and social skills for an overall development
PO Mapping same with correlation level 3,2,1 The notation of 1 - low, 2 - moderate , 3 - high	

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester I	Cell Biology	CO1	Students will gain an understanding of Cell structure, components, and characteristics of cellular chemical and molecular processes	3	2	1	2	1	1	1	1	1.5
		Average		3	2	1	2	1	1	1	1	1.5
	Molecular Immunology	CO1	Student should be able to Show deeper understanding of fundamentals of molecular immunology.	3	1	1	2	1	1	2	2	1.7
		CO2	Student will get familiar with components of immune system, types of immune-deficiencies, basics of antibody engineering etc	3	2	2	1	1	3	1	2	1.9
		Average		3	1.5	1	1.5	1	2	1	2	1.8
	Molecular Enzymology	CO1	Student will get deep knowledge about the concepts of molecular enzymology.	3	1	3	2	2	1	1	1	1.75

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester I	Molecular Enzymology	CO2	Student will get familiar with the enzyme kinetics & enzyme engineering	2	1	1	1	2	1	1	1	1.25
		Average		2.5	1	2	1.5	2	1	1	1	1.5
	Metabolic Engineering	CO1	Students will integrate the concept of pathway modification with cellular physiology	3	2	1	2	2	1	1	2	1.8
		CO2	Metabolic networks. Students will visualize the complexity and connectivity of metabolic pathways	2	2	1	1	2	2	2	1	1.7
		Average		2.5	2	`1	1.5	1	1.5	1.5	1.5	1.6
Semester II	Gene and Protein Science	CO1	Students will gain an understanding of Cell structure, components, and characteristics of cellular chemical and molecular processes	3	1	2	1	1	2	1	1	1.5
		Average		3	1	2	1	1	2	1	1	1.5
	Bioinformatics and Computational Biology	CO1	Demonstrate knowledge of the world-renowned biotechnology information repositories, such as NCBI databases, and the proficient use of the search algorithms for genes, proteins, RNA's, peptides, disease biomarkers, compounds and biologics from these repositories;	3	2	1	3	1	1	1	2	1.8
		CO2	Apply bioinformatics analysis knowledge and techniques to answer scientific questions in the health sciences	2	2	1	2	1	1	1	1	1.4
		Average		2.5	2	1	2.5	1	1	1	1	1.6

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester II	DNA Recombinant technology	CO1	To expose students to application of recombinant DNA technology in biotechnological research.	2	1	1	2	2	1	1	1	1.4
		CO2	To train students in strategizing research methodologies employing recombinant techniques.	2	2	1	2	3	1	1	1	1.7
		CO3	Student will get practical & theoretical knowledge in Recombinant DNA technology.	3	1	2	2	1	3	1	1	1.8
		Average		2.33	1.33	0.66	2	0.33	1.66	1	1	1.1
	Bioststistics & Research methodology	CO1	Understand the basic concept and scope of biostatistics and Research work, calculation and present of the data. It also informs the students, how the present research work writing and correlating.	3	2	1	1	1	3	1	1	1.7
		CO2	Learn to measure and analyze data	2	1	2	2	2	1	1	1	1.5
		CO3	Develop the ability to apply the methods while working on a research project work	1	2	1	2	1	1	1	1	1.3
		CO4	Describe the appropriate statistical methods required for a particular research design	1	1	1	2	1	2	1	1	1.3
		CO5	Understand principles of conducting ethical Research	3	1	1	1	2	1	1	1	1.4
		Average		2	1.4	1.2	1.6	1.4	1.6	1	1	1.4
Semester III	Genomics	CO1:	Upon completion of this course, the student will be familiar with most aspects of genomics.	2	1	1	2	1	1	2	1	1.4

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester III	Genomics	CO2	The student will learn how knowledge of genomics can be exploited for understanding cellular physiology, as well as for development of new diagnostics and vaccines, and other biotechnological purposes.	2	1	1	1	1	2	2	1	1.4
		Average		2	1	1	1.5	1	1.5	0.5	1	0.8
	Proteomics	CO1	Practical and theoretical knowledge in proteomics.	3	1	2	2	1	1	1	1	1.5
		CO2	Experience in protein identification and function.	1	1	1	1	1	1	2	1	1.2
		Average		2	1	1.5	1.5	1	1	1.5	1	1.4
	Nanotechnology	CO1	Understand the fundamental of nanomaterial in reference to characterization, synthesis and application.	3	1	2	2	2	2	2	1	2
		CO2	Student will get practical & theoretical knowledge in nano-biotechnology related field.	2	1	1	1	1	1	2	1	1
		Average		2.5	1	1.5	1.5	1.5	1	2	1	1.5
	Molecular Diagnostics	CO1	learn the advance laboratory techniques, interpret results and prepare reports.	3	1	1	1	2	2	1	1	1.5
		CO2	Student will get practical & theoretical knowledge in Molecular Diagnostics.	3	1	1	2	1	1	1	1	1.4
		Average		3	1	1	1.5	1.5	1.5	1	1	1.2

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester III	Drug Discovery	CO1	Student will get the knowledge about basic and advance concepts of drug discovery and gain an awareness of the current approaches to global drug discovery.	3	2	1	2	2	2	2	1	1.9
		CO2	Student will get practical & theoretical knowledge in the field of drug discovery.	2	2	1	1	1	1	1	1	1.3
		Average		2.5	2	1	1.5	1.5	1.5	1	1	1.6
	Seminar	CO1	Class seminars are conducted every semester to develop communication skills of students.	3	1	2	2	2	3	1	2	1.8
		CO2	Students will be able to comprehend the current research and should be able to put forward major ideas in front of their colleagues and teachers.	1	2	1	2	1	1	1	2	1.4
		CO3	Students will be evaluated on the basis of their presentation and questions and answer session.	1	2	2	2	1	3	1	2	1.8
		Average		1.7	1.7	1.7	2	1.3	2.3	1	2	1.7
Semester IV	Analytical Instrumentation	CO1	student will get deep knowledge of the fundamentals of analytical instrumentation	3	1	2	2	2	2	2	2	2
		CO2	Student will get practical & theoreticalknowledge in analytical instrumentation	2	1	2	2	2	1	2	2	1.8
		Average		2	1.4	2	2	2	1.5	2	2	1.9
	Bioethics,Biosafety, IPR & Technology transfer	CO1	Interpret basics of Bio-safety and Bio-ethics and its impact on all the biological sciences	3	1	1	1	1	1	2	2	1.5
		CO2	Recognize importance of Bio-safety practices, guidelines.	2	2	2	2	2	2	2	2	2

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester IV	Bioethics,Biosafety, IPR & Technology transfer	CO3	Able to understand and analyse ethical aspects related to biological, biomedical, health care and life science research	2	1	1	1	1	1	2	2	1.4
		CO4	Get knowledge of biosafety and risk assessment of products derived from recombinant DNA research and environment release of genetically modified organisms, national and international regulations.	3	2	3	3	2	3	2	2	2.5
		CO5	Analyze different types of intellectual property rights in general and protection of products derived from life science research and issues related to application and obtaining patents	2	3	3	3	3	3	2	2	2.7
		Average		2.4	1.8	2	2	1.8	2	2	2	1.4
	Quality Assurance & Quality Control	CO1	Students will be able to implement qualitative programs required for the progression of the molecular laboratories	1	2	2	1	1	1	2	1	1.4
		CO2	Students will be able to function accurately in quality improvement programs in accordance to development of laboratories.	1	2	2	1	1	1	2	2	1.5
		CO3	Students will be able to develop and conduct experiments to define important product development areas and analyze the results and draw recommendations for quality improvement	1	2	1	1	1	1	2	2	1.4
		Average		1	2	1.7	1	1	1	2	1.7	1.4

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester IV	Project /Dissertation	CO1	Develop the critical thinking ability and communication skills.	1	2	3	2	1	2	1	1	1.6
		CO2	Understand and apply the scientific method.	1	3	2	2	1	1	2	1	1.6
		CO3	Develop the aptitude to work on a scientific problem and look for alternative solution.	1	2	2	3	1	2	2	1	1.8
		CO4	Write their finding in a form of a thesis and defend it by presenting it in front of their teachers and examiners.	1	1	1	1	1	3	2	1	1.4
		CO5	Experience and embrace the habit of ethical practice in performing experiments and communicating them	1	1	2	2	2	3	3	3	2.1
		Average		1	1.8	2	2	1.2	2.2	2	1.4	1.7
	Educational tour/field work/Industrial visit/ Hospital visit	CO1	Student will improve the critical thinking ability	2	3	3	2	3	2	3	3	2.7
		CO2	This also helps students to enhance their interpersonal skills.	3	2	2	3	2	3	3	2	2.5
		Average		2.5	2.5	2.5	2.5	2.5	2.5	3	3.5	2.6

Mapping Average
Programe -M.Sc. Molecular Biology
Sem I to IV

SEMESTER	COURSE	PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8
Semester I	Cell Biology	3	2	1	2	1	1	1	1
	Molecular Immunology	3	1.5	1	1.5	1	2	1	2
	Molecular Enzymology	2.5	1	2	1.5	2	1	1	1
	Metabolic Engineering	2.5	2	`1	1.5	1	1.5	1.5	1.5
Semester II	Gene & Protein Science	3	1	2	1	1	2	1	1
	Bioinformatics & Computational Scoence	2	1.4	1.2	1.6	1.4	1.6	1	1
	Dna Recombinant Technologu	2.5	2	1	2.5	1	1	1	1
	Biostatistics & Research Methodology	2.33	1.33	0.66	2	0.33	1.66	1	1
Semester III	Geneomics	2	1.4	1.2	1.6	1.4	1.6	1	1
	Proteomics	2	1	1.5	1.5	1	1	1.5	1
	Nanobiotchnology	2.5	1	1.5	1.5	1.5	1	2	1
	Molecular Diagnostics	3	1	1	1.5	1.5	1.5	1	1
	Drug Discovery	2.5	2	1	1.5	1.5	1.5	1	1
	Seminar	1.666	1.666	1.666	2	1.333	2.33	1	2
	Analytical Instrumentation	2	1.4	2	2	2	1.5	2	2
Semester IV	Bioethics,Biosafety, Ipr & Technology Transfer	2.4	1.8	2	2	1.8	2	2	2
	Quality Assurance & Quality Control	1	2	1.66	1	1	1	2	1.66
	Dissertation /Project	1	1.8	2	2	1.2	2.2	2	1.4
	Educational Toure/ Field Visit/Hospital Visit/Industrial Visit	2.5	2.5	2.5	2.5	2.5	2.5	3	3.5

PO CO Relationship

Programe - M.Sc. Molecular Biology

Sem I to IV

Semester	Course & Course code	CO	Details	CO & PO Relationships	Domain		Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1: <30% , Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester I	Cell Biology	CO1	Students will gain an understanding of Cell structure, components, and characteristics of cellular chemical and molecular processes.	PO1 & PO8	A	2,3,4,5,6	60	100	60	100	NA	NA	120	100	3
		Total												100	Average :3
	Molecular Immunology	CO1	Show deeper understanding of fundamentals of molecular immunology.	PO1, PO2, PO4, PO6	C, A	1,2,3,,8,	26	43.3	38	63.3	NA		64	53.3	3
		CO2	Student will get familiar with components of immune system, types of immune-deficiencies, basics of antibody engineering etc	PO1, PO2, PO3, PO4, PO6	C,A,P	4,5,6,7	34	56	22	36.6	NA	NA	56	46.6	2
		Total					60		60				120	100	Average: 2.5
	Molecular Enzymology	CO1	Student will get deep knowledge about the concepts of molecular enzymology.	PO1 , PO2, PO4, PO6, PO7, PO8	C,A,P	1,2,3	20	33.33	24	40	NA	NA	44	36.6	2
		CO2	Student will get familiar with the enzyme kinetics & enzyme engineering.	PO1, PO2, PO3, PO4, PO6, PO7, PO8	C,A,P	4,5,6,7	40	66.66	36	60	NA	NA	76	63.3	3
		Total					60	100	60	100			120	100	Average: 2.5
	Metabolic engineering	CO1	Metabolic engineering. Students will integrate the concept of pathway modification with cellular physiology.	PO1,PO2, PO3, PO4, PO6, PO7	C,A,P	1,2,3	28	46.6	36	60	NA	NA	64	53.33	3
		CO2	Metabolic networks. Students will visualize the complexity and connectivity of metabolic pathways	PO1, PO2, PO3, PO4, PO8	C,A,P	4,5	32	53.3	24	40	NA	NA	56	46.66	2
		Total					60	100	60	100			120	100	Average: 2.5
Semester II	Gene & Protein Sciences	CO1	Understand the basic concepts of gene & protein science and its application in the field of molecular biology.	PO1, PO2, PO4, PO7, PO8	C,A	,3,4,5,6,	60	100	60	100	NA	NA	120	100	3
		Total					60	100	60	100			120	100	Average : 3
	Bioinformatiocs and Computational Biology	CO1	Demonstrate knowledge of the world-renowned biotechnology information repositories, such as NCBI databases, and the proficient use of the search algorithms for genes, proteins, RNA's, peptides, disease biomarkers, compounds and biologics from these repositories;	PO1-PO8	C,A,P	1,5,7,8,9	30	50	27	45	NA	NA	57	47.5	2

Semester	Course & Course code	CO	Details	CO & PO Relationships	Domain		Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1: <30% , Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester II	Bioinformatiocs and Computational Biology	CO2	Apply bioinformatics analysis knowledge and techniques to answer scientific questions in the health sciences	PO1-PO8	C,A,P	2,3,4,6,7	30	50	33	55	NA	NA	63	52.4	3
		Total					60	100	60	100			120	100	Average: 2.5
	DNA Recombinant technology	CO1	To expose students to application of recombinant DNA technology in biotechnological research.	PO1, PO2, PO3, PO4, PO6, PO7, PO8	C,A	1,8	14	23.33	12	20	NA	NA	26	21.6	1
		CO2	To train students in strategizing research methodologies employing recombinant techniques.	PO1, PO2, PO3, PO4, PO6, PO7, PO8	C,A,P	2,3,4,7	28	46.66	28	46.6	NA	NA	56	46.66	2
		CO3	Student will get practical & theoretical knowledge in Recombinant DNA technology.	PO1, PO2, PO4, PO5, PO6, PO7, PO8	C,A,P	5,6	18	30	16	26.6	NA	NA	34	28.33	2
		Total					60	100	60	100			120	100	Aerage: 1.66
	Bioststistics & Research methodology	CO1	Understand the basic concept and scope of biostatistics and Research work, calculation and present of the data. It also informs the students, how the present research work writing and correlating.	PO1, PO2, PO3, PO4, PO6, PO7, PO8	C,A	2,3	8	13.33	10	16.6	NA	NA	18	15	1
		CO2	Learn to measure and analyze data	PO1, PO2, PO6, PO7, PO8	C,A,P	4,5,6	12	20	15	25	NA	NA	27	22.5	2
		CO3	Develop the ability to apply the methods while working on a research project work	PO1-PO8	C,A,P	7,8,9,10	16	26.66	14	23.33	NA	NA	30	25	2
		CO4	Describe the appropriate statistical methods required for a particular research design	PO1-PO8	C,P	12,13,14	22	36.66	20	33.33	NA	NA	42	35	2
		CO5	Understand principles of conducting ethical Research	PO1, PO2, PO3, PO4, PO6, PO7, PO8	C,A,P	1	2	3.33	1	1.66	NA	NA	3	2.5	–
		Total					60	100	60	100			120	100	Average: 1.75
Semester III	Genomics	CO1	Upon completion of this course, the student will be familiar with most aspects of genomics.	PO1, PO2, PO6, PO8	C,A	1,2,3	29	48.33	28	46.66	NA	NA	57	47.5	2

Semester	Course & Course code	CO	Details	CO & PO Relationships	Domain		Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1: <30% , Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester III	Genomics	CO2	The student will learn how knowledge of genomics can be exploited for understanding cellular physiology, as well as for development of new diagnostics and vaccines, and other biotechnological purposes.	PO1,PO2, PO3, PO4, PO5, PO8	C,P	4,5,6	31	51.66	32	53.33	NA	NA	63	52.5	3
		Total					60	100	60	100			120	100	Average: 2.5
	Proteomics	CO1	Practical and theoretical knowledge in proteomics.	PO1, PO2, PO5, PO6, PO8	C,P	1,2,3,6	34	56.66	33	55	NA	NA	67	55.83	3
		CO2	Experience in protein identification and function.	PO1-PO8	C,A,P	4,5	26	43.33	27	45	NA	NA	53	44.16	2
		Total					60	100	60	100			120	100	Average: 2.5
	Nanobiotechnology	CO1	Understand the fundamental of nanomaterial in reference to characterization, synthesis and application.	PO1, PO2, PO6, PO8	C	3,7,8,9,1(	38	63.33	24	40	NA	NA	62	51.6	3
		CO2	Student will get practical & theoretical knowledge in nano-biotechnology related field.	PO1, PO2, PO3, PO4, PO5, PO6, PO8	C,P	4,5,6	22	36.66	36	60	NA	NA	58	48.33	2
		Total					60	100	60	100			120	100	Average: 2.5
	Moleclar Diagnostics	CO1	Advance laboratory techniques, interpret results and prepare reports.	PO1, PO2, PO3, PO4, PO7, PO8	C,A	1,,5	25	41.66	22	36.66	NA	NA	47	39.1	2
		CO2	Student will get practical & theoretical knowledge in Molecular Diagnostics.	PO1-PO8	C,A,P	2,3,4	35	58.33	38	63.33	NA	NA	73	60.8	3
		Total					60	100	60	100			120	100	Average: 2.5
	Drug discovery	CO1	Student will get the knowledge about basic and advance concepts of drug discovery and gain an awareness of the current approaches to global drug discovery.	PO1, PO2, PO3, PO6, PO7, PO8	C,A,P	1,2,3,5,6	42	70	21	35	NA	Na	63	52.5	3
		CO2	Student will get practical & theoretical knowledge in the field of drug discovery.	PO1-PO8	C,P	4	18	30	39	65	NA	NA	57	47.5	2
		Total					60	100	60	100			120	100	Average: 2.5
	Seminar	CO1	Class seminars are conducted every semester to develop communication skills of students.	PO1, PO2, PO6, PO7, PO8	C,A,P	0	20	33.33	0	0	NA	NA			
		CO2	Students will be able to comprehend the current research and should be able to put forward major ideas in front of their colleagues and teachers.	PO1-PO8	C,A,P	0	20	33.33	0	0	NA	NA			

Semester	Course & Course code	CO	Details	CO & PO Relationships	Domain		Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1: <30% , Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester III	Seminar	CO3	Students will be evaluated on the basis of their presentation and questions and answer session.	PO1, PO2, PO5, PO6, PO7, PO8	C,A,P	0	20	33.33	0	0	NA	NA			
		Total													
	Analytical Instrumentation	CO1	student will get deep knowledge of the fundamentals of analytical instrumentation	PO1, PO2, PO8	C,A	1,2,4,5,	35	58.33	23	38.66	NA	NA	58	48.33	2
		CO2	Student will get practical & theoretical knowledge in analytical instrumentation	PO1, PO2, PO3, PO4, PO5, PO6,	C,P	3,6,7	25	41.66	37	61.66	NA	NA	62	51.66	3
		Total					60	100	60	100			120	100	Average: 2.5
	Bioethics, Biosaftey, IPR & Technology Transfer	CO1	Interpret basics of Bio-safety and Bio-ethics and its impact on all the biological sciences	PO1-PO8	C,A,P	1	10	16.6	0	0	NA	NA	10	16.6	2
		CO2	Recognize importance of Bio-safety practices, guidelines.	PO1, PO2, PO6, PO7, PO8	C,A,P	2	10	16.6	0	0	NA	NA	10	16.6	2
		CO3	Able to understand and analyse ethical aspects related to biological, biomedical, health care and life science research	PO1-PO8	C,A,P	3	10	16.6	0	0	NA	NA	10	16.6	2
		CO4	Get knowledge of biosafety and risk assessment of products derived from recombinant DNA research and environment release of genetically modified organisms, national and international regulations.	PO1-PO8	C,A,P	4	15	25	0	0	NA	NA	15	25	2
		CO5	Analyze different types of intellectual property rights in general and protection of products derived from life science research and issues related to application and obtaining patents	PO1-PO8	C,A,P	5,6	15	25	0	0	NA	NA	15	25	2
		Total					60	100	0	0			60	100	Average: 2
	Quality assurance & Quality Control	CO1	Students will be able to implement qualitative programs required for the progression of the molecular laboratories	PO1-PO8	C,A,P	1,2,3	27	45	24	40	NA	NA	51	42.5	2
		CO2	Students will be able to function accurately in quality improvement programs in accordance to development of laboratories.	PO1-PO8	C,A,P	4,5	20	33.33	21	35	NA	NA	41	34.16	2

Semester	Course & Course code	CO	Details	CO & PO Relationships	Domain		Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1: <30% , Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester III	Quality assurance & Quality Control	CO3	Students will be able to develop and conduct experiments to define important product development areas and analyze the results and draw recommendations for quality improvement	PO1-PO8	C,A	6	13	21.66	15	25	NA	NA	28	23.33	2
		Total					60	100	60	100					Average: 2
	Project/ dissertation	CO1	Develop the critical thinking ability and communication skills.	PO1-PO8	C,A,P	0									
		CO2	Understand and apply the scientific method.	PO1-PO8	C,A,P	0									
		CO3	Develop the aptitude to work on a scientific problem and look for alternative solution.	PO1-PO8	C,A,P	0									
		CO4	Write their finding in a form of a thesis and defend it by presenting it in front of their teachers and examiners.	PO1-PO8	C,A,P	0									
		CO5	Experience and embrace the habit of ethical practice in performing experiments and communicating them	PO1-PO8	C,A,P	0									
		Total													
	Educational tour/field work/Industrial visit/ Hospital visit	CO1	Student will improve the critical thinking ability	PO1-PO8	C,A,P	0	0	0							
		CO2	This also helps students to enhance their interpersonal skills.	PO1-PO8	C,A,P	0	0	0							
		Total					0	0							

CO PO Matrix	
Programe - M.Sc. Clinical Embryology	
Sem I to IV	
PO1.	Nurture the scientific and/or clinical knowledge and skills for development of industrial applications, health care practices and entrepreneurship.
PO2.	Develop the ability of critical thinking to analyse, interpret problems and to find out systematic approach for solution.
PO3.	Impart decision making capability for handling various circumstances in their respective areas
PO4.	Demonstrate research skills for planning, designing, implementation and effective utilization of research findings for community.
PO5.	Develop an ability to function as an efficientindividual and team player in multidisciplinary sectors for effective outcomes
PO6.	Demonstrate an effective written and oral communication skills to communicate effectively in health care sector, industries,academia and research.
PO7.	Inculcate code of ethics in professional and social circumstances to execute them in daily practices and research inrespective areas of specialization
PO8.	Develop lifelong learning attitude and values for enhancementof professional and social skills for an overall development
PO Mapping same with correlation level 3,2,1 The notation of 1 - low, 2 - moderate , 3 - high	

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 1	Relevant Gross Anatomy CE 101	CO 1	To demonstrate and understand the relevant gross anatomy of male and female reproductive system.	3	3	2	2	1	2	3	3	2.4
		CO 2	To understand the relevant gross anatomy of urinary system.	3	3	2	2	1	2	3	3	2.4
		CO 3	To understand the relevant gross anatomy of endocrine system.	3	3	2	2	1	2	3	3	2.4
		Average		3.0	3.0	2.0	2.0	1.0	2.0	3.0	3.0	2.4
	Histology CE 102	CO 1	To describe the histology of male and female reproductive system	3	3	3	3	1	2	3	3	2.6
		CO 2	To identify and study the istology of urinary system.	3	3	3	3	1	2	3	3	2.6
		CO 3	To understand the histology of endocrine system	3	3	3	3	1	2	3	3	2.6
		Average		3	3	3	3	1	2	3	3	2.6

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 1	Genetics and Reproductive Hormone CE 103	CO 1	To have detail knowledge about Chromosomes, Molecular genetics, Developmental genetics, Prenatal diagnosis and genetic counselling, Genetics in Infertility,Epigenetics and The Human Genome Project.	3	3	3	3	1	2	3	3	2.6
		CO 2	To study the physiology of reproductive hormones such as Pituitary and thyroid hormones, Male and Female sex hormones.	3	3	3	3	1	2	3	3	2.6
		Average		3	3	3	3	1	2	3	3	2.6
	General and Systemic Embryology CE 104	CO 1	To able to understand in detail General Embryology as week wise development from 1st week to 4th week and trophoblast development with twinning	3	3	3	3	1	2	3	3	2.6
		CO 2	To able to understand in detail Systemic Embryology under CVS, Urinary system , MRS, FRS, Teratogenesis.	3	3	3	3	1	2	3	3	2.6
		Average		3	3	3	3	1	2	3	3	2.6
Semester 2	Infertility and Ovulation Induction Methods CE 105	CO 1	To have a detail knowledge about Male and Female Infertility.	3	3	3	3	1	2	3	3	2.6
		CO 2	To have a detail knowledge about drugs of infertility and their use.	3	3	3	3	1	2	3	3	2.6
		CO 3	To understand in detail methods and protocols of ovulation induction, Patient monitoring, complications and OHSS and Ovum pick up.	3	3	3	3	1	2	3	3	2.6
		Average		3.0	3.0	3.0	3.0	1.0	2.0	3.0	3.0	2.6

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 2	Quality Assessment, Statistics, Handling data, Ethics, Legislation CE 106	CO 1	To study the Ethical and legal issues such as Lab ethics, Legislation in India, Policies and principles, Reegulatory bodies, Ethics in health care.	3	3	3	3	1	1	3	3	2.5
		CO 2	To have a detail knowledge about ART- legal issues and Acts, Surrogacy and Gamete donation programme.	3	3	3	3	1	1	3	3	2.5
		CO 3	To have a detail knowledge of their practical application.	3	3	3	3	1	1	3	3	2.5
		Average		3.0	3.0	3.0	3.0	1.0	1.0	3.0	3.0	2.5
	IVF Procedures CE 107	CO 1	To study in detail about IVF procedure under embryo development and metabolism, Sperm preparation, Grading of gamete and embryo, Embryo cullture and transfer techniques.	3	3	3	3	1	2	3	3	2.6
		CO 2	To study in detail about Complications how to deal with theam and counselling.	3	3	3	3	1	2	3	3	2.6
		Average		3	3	3	3	1	2	3	3	2.6
	Research Methodology and Biostatistics CC 001	CO 1	To have a basic knowledge about concepts related to Biostatistics such as Data presentation, sampling, correlation and vital statistics.	3	3	3	3	1	2	3	3	2.6
		CO 2	To have a basic knowledge about research methodology for project purpose such as material and time management with documentation and presentation	3	3	3	3	1	2	3	3	2.6

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 2	Research Methodology and Biostatistics CC 001	CO 3	To able to understand basic Biostatistics and research concepts and be able to use them to prepare thesis research protocol.	3	3	3	3	1	2	3	3	2.6
		Average		3	3	3	3	1	2	3	3	2.6
Semester 3	Introduction to IVF Lab CE 108	CO 1	To study and understand about various Lab set ups, lab designing and establishment, Record maintenance, Quality improvement.	3	3	3	3	1	2	3	3	2.6
		Average		3.0	3.0	3.0	3.0	1.0	2.0	3.0	3.0	2.6
	Techniques used in IVF Lab CE 109	CO 1	To know in detail about Cryoprotectant, Cryopreservation of various sample freezing and retrieval techniques and recent development.	3	3	3	3	1	3	3	3	2.8
		CO 2	To have a detail knowledge about different culture media and theie handling, various culture media techniques and co-culture.	3	3	3	3	1	3	3	3	2.8
		Average		3.0	3.0	3.0	3.0	1.0	3.0	3.0	3.0	2.7
	ICSI CE 110	CO 1	To have a knowledge about ICSI-indications and contradications, techniques, Micromanipultor, Equipment, Pre procedure, Risk of anomalies, IMSI, Microscopy, Assessment and counselling.	3	3	3	3	2	3	3	3	2.9
		Average		3	3	3	3	2	3	3	3	2.9
	Biochemistry Including Steroid Metabolism	CO 1	To study Radiology in ART as Basic principle og Ultrasonography, Follicular study, Diagnosis of pregnancy, Ectopic pregnancy and various tests.	3	3	3	3	1	3	3	3	2.8
		Average		3	3	3	3	1	3	3	3	2.8

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 3	Lab Equipment CE 112	CO 1	To study various laboratory equipment like Micro-manipulator, Micropipette, other equipments of ICSI, Microscopes,	3	3	3	3	2	3	3	3	2.9
		CO 2	To have a detail knowledge about Instrument handling, Maintenance, Calibration and Trouble shooting	3	3	3	3	1	2	3	3	2.6
		CO 3	To have a detail knowledge about their practical apllication	3	3	3	3	1	3	3	3	2.8
		Average		3	3	3	3	1.3	2.6	3	3	2.8
Semester 4	Pursuit Of Inner self Excellence GE 001	CO1	To have a knowledge about spiritual values for human excellence, correlation between valuees and the subjects	3	3	3	1	3	3	3	3	2.8
		CO2	To know the intergrating values and lif	3	3	3	1	3	3	3	3	2.8
		CO3	To study experiencing through the heart for self transformation.	3	3	3	1	3	3	3	3	2.8
		Average		3.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	2.8
	Bioethics, Biosafty, IPR and Technology Transfer GE 002	CO1	To study the ethics and patenting its benefits and their application.	3	3	3	2	3	3	3	3	2.9
		CO 2	Introduction to quality assurance, accreditation & SOP writing and its application.	3	3	3	2	3	3	3	3	2.9
		CO 3	To study in detail about fundings in biotech business, roles of knowledge centres R&D	3	3	3	3	3	3	3	3	3.0
		Average		3.0	3.0	3.0	2.3	3.0	3.0	3.0	3.0	2.9
	Disaster Management and Mitigation Resources GE 003	CO 1	To have a detailed knowledge and understanding of the disaster phenomenon, its different contextual aspects, impacts and public health consequences.	3	3	2	2	3	3	3	3	2.8
		CO 2	To understand various disaster management policy and administration	3	3	2	2	3	3	3	3	2.8

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 4	Disaster Management and Mitigation Resources	CO 3	To study ways to raise finance for relief expenditure, role of government agencies and NGO's in this process, Legal aspects related to finance raising as well as preventive and mitigation measures.	3	3	2	2	3	3	3	3	2.8
		Average		3	3	2	2	3	3	3	3	2.8
	Human Rights GE 004	CO1	To study Human Rights at various levels , Human Rights in India	3	3	3	3	2	3	3	3	2.9
		CO2	To study in detail Huan Rights violation and political issue	3	3	3	3	2	3	3	3	2.9
		Average		3	3	3	3	2	3	3	3	2.9

PO CO Relationship

Programe - MSc. Clinical Embryology

Sem I to IV

Semester	Course & Course code	CO	Details	CO & PO Relationships	Domain		Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1: <30% , Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 1	Relevant Gross Anatomy CE 101	CO1	To demonstrate and understand the relevant gross anatomy of male and female reproductive system.	PO1, PO2,PO3,	C,A,P	1'- 3	39	65	40	66.7	0	0	79	0.6	3
		CO 2	To understand the relevant gross anatomy of urinary system.	PO4	C,A,P	4'	6	10	4	6.7	0	0	10	0.08	1
		CO 3	To understand the relevant gross anatomy of endocrine system.	PO5	C,A,P	5'	15	25	16	26.7	0	0	31	0.25	2
		Total					60		60		0		120	1	2
	Histology CE 102	CO1	To describe the histology of male and female reproductive system	PO1, PO2,PO3,	C,A,P	1' -3	34	75.6	26	43.3	0	0	60	0.57	3
		CO 2	To identify and study the istology of urinary system.	PO4	C,A,P	4'	3	6.7	14	23.3	0	0	17	0.16	1
		CO 3	To understand the histology of endocrine system	PO5	C,A,P	5'	5	11.1	23	38.3	0	0	28	0.26	2
		Total					42		63		0		60	1	2
	Genetics and Reproductive Hormone CE 103	CO1	To have detail knowledge about Chromosomes, Molecular genetics, Developmental genetics, Prenatal diagnosis and genetic counselling, Genetics in Infertility,Epigenetics and The Human Genome Project.	PO1	C,A,P	1'	56	93.3	10	16.7	0	0	66	0.55	3
		CO 2	To study the physiology of reproductive hormones such as Pituitary and thyroid hormones, Male and Female sex hormones.	PO2	C,A,P	2'	12	20	42	70	0	0	54	0.45	3
		Total					56		52		0		120	1	3
	General and Systemic Embryology CE 104	CO1	To able to understand in detail General Embryology as week wise development from 1st week to 4th week and trophoblast development with twinning	PO1 ,PO2, PO3,P04,PO 5,PO6	C ,A, P	1' -5	42	70	40	66.7	0	0	82	0.68	3
		CO 2	To able to understand in detail Systemic Embryology under CVS, Urinary system , MRS, FRS, Teratogenesis.	PO7, PO8	C ,A, P	7'-8	18	30	20	33.3	0	0	38	0.31	2
		Total					60		60		0		82	1	3

Semester	Course & Course code	CO	Details	CO & PO Relationships	Domain		Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1: <30% , Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 2	Infertility and Ovulation Induction Methods CE 105	CO1	To have a detail knowledge about Male and Female Infertility.	PO1,PO2,PO3	C,A,P	1' -3	22	36.7	10	33.3	12	40	44	0.37	2
		CO 2	To have a detail knowledge about drugs of infertility and their use.	PO4	C,A,P	4'	16	26.7	8	26.7	13	43.3	37	0.3	2
		CO 3	To understand in detail methods and protocols of ovulation induction, Patient monitoring, complications and OHSS and Ovum pick up.	PO5,PO6,PO7,PO8,PO9	C,A,P	5'-9	22	36.7	12	40	5	16.7	39	0.325	2
		Total					60		30		30		120	1	2
	Quality Assessment, Statistics, Handling data, Ethics, Legislation CE 106	CO1	To study the Ethical and legal issues such as Lab ethics, Legislation in India, Policies and principles, Reegulatory bodies, Ethics in health care.	PO1 ,PO2, PO3	C,A,P	1' -3	22	36.7	10	33.3	13	43.3	45	1	3
		CO 2	To have a detail knowledge about ART-legal issues and Acts, Surrogacy and Gamete donation programme.	PO4, PO5, PO6	C,A,P	4'-6	22	36.7	6	20	9	30	37	0.82	3
		CO 3	To have a detail knowledge of their practical application.	PO7, PO8	C,A,P	7'8	16	26.7	14	46.7	8	26.7	38	0.84	3
		Total					60		30		30		120	100	3
	IVF Procedures CE 107	CO1	To study in detail about IVF procedure under embryo development and metabolism, Sperm preparation, Grading of gamete and embryo, Embryo cullture and transfer techniques.	PO1, PO2, PO3, PO4	C,A,P	1' -4	36	60	17	56.7	14	46.7	67	0.6	3
		CO2	To study in detail about Complications how to deal with theam and counselling.	PO5	C,A,P	5'	24	40	13	43.3	16	53.3	53	0.44	3
		Total					60		30		30		120	1	3
	Research Methodology and Biostatistics CC 001	CO1	To have a basic knowledge about concepts related to Biostatistics such as Data presentation, sampling, correlation and vital statistics.	PO7,PO3,PO11,PO14	C,A,P	', 7, 11,1	14	23.3	15	25	0	0	29	0.24	1
		CO 2	To have a basic knowledge about research methodology for project purpose such as material and time management with documentation and presentation	PO1, PO2, PO4, PO5	C,A,P	1',2,4,5	20	33.3	25	41.6			45	0.375	2
		CO 3	To able to understand basic Biostatistics and research concepts and be able to use them to prepare thesis research protocol.	PO8, PO9, PO10, PO11, PO12, PO13, PO15	C,A,P	0,11,12,1	26	43.3	20	33.3			46	0.38	2
		Total					60		60		0		120	1	2

Semester	Course & Course code	CO	Details	CO & PO Relationships	Domain		Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level 1: <30% , Not addressed :<5%
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 3	Introduction to IVF Lab CE 108	CO1	To study and understand about various Lab set ups, lab designing and establishment, Record maintenance, Quality improvement.	PO1,PO2,PO3,PO4,PO5	C,A,P	1'-5	45	100	30	100	30	100	105	1	3
		Total					45		30		30		105	100	3
	Techniques used in IVF Lab CE 109	CO1	To know in detail about Cryoprotectant, Cryopreservation of various sample freezing and retrieval techniques and recent development.	PO1	C,A,P	1	34	56.7	16	26.7	18	30	68	0.56	3
		CO2	To have a detail knowledge about different culture media and theie handling, various culture media techniques and co-culture.	PO2	C,A,P	2	26	43.3	14	23.3	12	20	52	0.43	3
		Total					60		30		30		120	1	3
	ICSI CE 110	CO1	To have a knowledge about ICSI-indications and contradications, techniques, Micromanipultor, Equipment, Pre procedure, Risk of anomalies, IMSI, Microscopy, Assessment and counselling.	PO1,PO2,PO3,PO4,PO5,PO6,PO7,PO8,PO9,PO10,PO11	C,A,P	1'-6	60	66.7	17	56.7	13	43.3	90	1	3
		Total					59		17		13		90	1	3
	Biochemistry Including Steroid Metabolism CE 111	CO1	To study Radiology in ART as Basic principle og Ultrasonography, Follicular study, Diagnosis of pregnancy, Ectopic pregnancy and various tests.	PO1,PO2,PO5,PO6	C,A,P	1,2,5,6	60	66.7	30	33.3	0	0	90	1	3
		Total					60		30		0		90	100	3
	Lab Equipment CE 112	CO1	To study various laboratory equipment like Micro-manipulator, Micropipette, other equipments of ICSI, Microscopes,	PO1,PO2,PO3	C,A,P	1'-3	32	53.3	5	33.3	6	40	43	0.5	3
		CO2	To have a detail knowledge about Instrument handling, Maintenance, Calibration and Trouble shooting	PO5,PO6,PO7	C,A,P	5'-7	15	25	4	26.7	4	26.7	23	0.25	2
		CO 3	To have a detail knowledge about their practical apllication	PO4	C,A,P	4	13	21.7	6	40	5	33.3	24	0.26	2
		Total					60		15	100	15	100	90	1	2

CO PO Matrix	
Programe - M Optometry	
Sem I to IV	
PO1.	Nurture the scientific and/or clinical knowledge and skills for development of industrial applications, health care practices and entrepreneurship.
PO2.	Develop the ability of critical thinking to analyse, interpret problems and to find out systematic approach for solution.
PO3.	Impart decision making capability for handling various circumstances in their respective areas
PO4.	Demonstrate research skills for planning, designing, implementation and effective utilization of research findings for community.
PO5.	Develop an ability to function as an efficientindividual and team player in multidisciplinary sectors for effective outcomes
PO6.	Demonstrate an effective written and oral communication skills to communicate effectively in health care sector, industries,academia and research.
PO7.	Inculcate code of ethics in professional and social circumstances to execute them in daily practices and research inrespective areas of specialization
PO8.	Develop lifelong learning attitude and values for enhancementof professional and social skills for an overall development
PO Mapping same with correlation level 3,2,1 The notation of 1 - low, 2 - moderate , 3 - high	

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 1	**Epidemiology Public health & Community Eye Health (101 L &P)**	CO1	To have a thorough understanding of epidemiological concepts.	3	2	2.0	3.0	2.0	1.0	1.0	3.0	2.1
		CO2	To have a thorough understanding of conducting of screening for specific eye conditions, and resultant implications through theoretical and practical exposure	3	3	3.0	3.0	3.0	1.0	3.0	3.0	2.8
		CO3	To understand role of optometrists in community eye health	3	3	3.0	3.0	3.0	2.0	3.0	3.0	2.9
		Average		3	2.7	2.7	3.0	2.7	1.3	2.3	3.0	2.6
	Ocular Diseases 1 (102)	CO1	To be able to diagnose anterior segment Ocular abnormalities	3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		CO2	To be able to manage and co-manage therapeutics for anterior segment	3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		Average		3	2.9	2.9	3.0	2.9	2.4	2.8	3.0	2.9

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 1	**Anterior Segment Diagnostic (103 L & P)**	CO1	To be able to perform and interpret corneal diagnostics including, Topography/Pentacam/Orbscan, Secular microscopy,Tachymetry, Abberometry, A-Scan OCT UBM ,	3	3	3.0	3.0	3.0	2.0	3.0	3.0	3.0
		CO2	To be able to interpret glaucoma diagnostic reports OCT, HRT, Gonioscopy, and ONH evaluation.	3	3	3.0	3.0	3.0	2.0	3.0	3.0	3.0
		CO3	To be able to perform anterior segment photography and ophthalmic imaging	3	3	3.0	3.0	3.0	2.0	3.0	3.0	3.0
		Average		3	3	3.0	3.0	3.0	2.0	3.0	3.0	2.9
	Optometry Directed Clinical Education-I (104 CP)		Students will demonstrate competence in basic, intermediate and Advance procedures.	3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		Average		3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Semester 2	**Ocular Diseases and Diagnostics II (105 L & P)**	CO1	To be able to perform and interpret posterior segmentent diagnostic procedures.	3	3	3.0	3.0	3.0	2.0	2.0	3.0	2.8
		CO2	To be able to diagnose and co-manage diseases and disorders of posterior segmen	3	3	3.0	3.0	3.0	2.0	2.0	3.0	2.8
		Average		3	3	3.0	3.0	3.0	2.0	2.0	3.0	2.8
	Advanced Contact Lenses I	CO1	•To be able to understand corneal physiology and oxygen needs	3	1	1.0	1.0	1.0	1.0	1.0	1.0	1.3
		CO2	To be able to fit specialized contact lenses for various ocular conditions	3	3	3.0	3.0	2.0	3.0	3.0	3.0	2.9
		CO3	To be able to diagnose and manage complications due to contact lenses	3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		Average		3	3	3.0	3.0	2.5	3.0	3.0	3.0	2.9

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 2	Binocular Vision and Pediatric Optometry	CO1	To be able to diagnose and manage and co-manage binocular vision anomalies	3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		CO2	•To be able to diagnose and co-manage visual perceptual anomalies	3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		Average		3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Low vision and Geriatric Optometry	CO1	• To be able to diagnose and manage patients with vision impairment	3	3	3.0	3.0	2.0	3.0	3.0	3.0	2.9
		CO2	To be able to perform specialized diagnostics for patients with low vision and with multiple disabilities	3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		CO3	• To be able to train for eccentric viewing and steady eye technique	3	3	3.0	1.0	3.0	3.0	3.0	3.0	2.8
		CO4	To be able to rehabilitate patients with VI with vocational counseling and activities of daily living	3	3	3.0	1.0	3.0	3.0	3.0	3.0	2.8
		Average		3	3	3.0	1.0	3.0	3.0	3.0	3.0	2.8
	Optometry Directed Clinical Education-(109CP)	CO1	Students will demonstrate competence in basic, intermediate and Advance procedures.	3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		Average		3	3	3.0	2.0	3.0	3.0	3.0	3.0	3.0
	Research Methodology & Biostatistics (CC001)	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	3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		Average		3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 2	Basics of Clinical Skills Learning (CEC002)	CO1	After successful accomplishment of the course, the students would be able to Measure Vital Signs, do basic physical Examination of the patients, NG tube basics, Administration of Medicines	3	3	3.0	1.0	3.0	3.0	3.0	3.0	2.8
		CO2	The students will learn about Asepsis, and the Cleanliness related to asepsis and on mobility of the patients	3	3	3.0	1.0	1.0	3.0	3.0	3.0	2.5
		Average		3	3	3.0	3.0	2.0	3.0	3.0	3.0	2.6
	Hospital Operation Management (CEC003)	CO1	Understand and apply resource management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors	3	3	3.0	1.0	3.0	3.0	3.0	3.0	2.8
		CO2	Communicate effectively and develop their leadership and teambuilding abilities	3	3	3.0	1.0	3.0	3.0	3.0	3.0	2.8
		CO3	Apply modern change management and innovation management concepts to optimize structures	3	3	3.0	1.0	3.0	3.0	3.0	3.0	2.8
		CO4	Analyze existing hospital service policies and enhance their alignment within the local and national context	3	3	3.0	1.0	1.0	3.0	3.0	3.0	2.5
		Average		3	3	3.0	1.0	2.0	3.0	3.0	3.0	2.7
Semester 3	Advanced Dispensing Optics (110 L & P)	CO1	To design and dispense appropriate eyewear for a variety of patients.	3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		CO2	To demonstarte knowledge about troubleshooting and patient handling	3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		Average		3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 3	Advanced Contact Lenses II(111L & P)	CO1	To be able to fit specialized contact lenses for various ocular conditions	3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		CO2	To be able to diagnose and manage complications due to contact lenses	3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		Average		3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Visual Perception, Neuroscience and Psychophysics (112 L)	CO1	To be able to diagnose and manage patients with neuro- optometric disorders	3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		CO2	To be able to provide therapy for rehab	3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		Average		3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Applied Vision Therapy (113L & P)	CO1	To demnostrate knowledge of the unique qualities, scientific, and clinical principles of each clinical condition.	3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		CO2	. To identify the characteristic history, signs and symptoms for each clinical condition	3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		CO3	to assess each clinical condition, including specific test protocols and their interpretation	3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 3	**Applied Vision Therapy (113L & P)**	CO4	The specific treatment and management of each clinical condition including: Prognostic indicators , Treatment options , Duration and frequency of treatment , Treatment philosophy and goals , Specific lens treatment and therapy procedures including rationale for treatment ,Ergonomics and visual hygiene , Outcomes to determine successful completion of treatment ,Frequency of follow-up care and patient instructions , Referral criteria (medical, neurological, educational, etc.)	3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		Average		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Optometry Directed Clinical Education-III (CP 114)	CO1	Students will demonstrate competence in basic, intermediate and Advance procedures.	3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		Average		3	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Semester 4	**Pursuit of Innerself Excellence (POISE)**	CO1	Students will become self dependent, more decisive and develop intuitive ability for their study and career related matter.	1	2	3.0	1.0	3.0	2.0	2.0	3.0	2.1
		CO2	Enhanced communication skills, public speaking & improved Presentation ability.	2	1	1.0	1.0	2.0	3.0	2.0	3.0	1.9
		CO3	Development of personal attributes like Empathy, Compassion, Service, Love, brotherhood and Team work abilities	1	1	1.0	1.0	3.0	3.0	3.0	3.0	2.0
		Average		1.3	1.3	1.7	1.0	2.7	2.7	2.3	3.0	2.0

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 4	Disaster management and Mitigation Resources	CO1	Understand the world-wide distribution of hazards and disasters and know the similarities and differences between natural and technological disasters.	2	2	3.0	2.0	2.0	1.0	2.0	3.0	2.1
		CO2	Acquire mitigation skills that help communities reduce the amount of damage and loss from disaster.	2	2	1.0	1.0	2.0	1.0	2.0	2.0	1.6
		CO3	Gain preparedness skills that increase community effectiveness in responding to disaster.	2	2	2.0	1.0	2.0	1.0	2.0	3.0	1.9
		Average		2.0	2.0	2.0	1.3	2.0	1.0	2.0	2.7	1.9
	Human Rights	CO1	Demonstrate a good understanding of the provisions under the Constitution of India dealing with human rights.	2	2	2.0	1.0	1.0	1.0	3.0	3.0	1.9
		CO2	Promote human rights through legal as well as non-legal means.	2	2	2.0	1.0	1.0	1.0	3.0	3.0	1.9
		CO3	Participate in legal, political and other debates involving human rights in a	2	2	2.0	1.0	1.0	1.0	3.0	3.0	1.9
		Average		2.0	2.0	2.0	1.0	1.0	1.0	3.0	3.0	1.9

Mapping Average
Programe - M.Optometry
Sem I to IV

SEMESTER	COURSE	PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	Average
Semester 1	Epidemiology Public health & Community Eye Health (101 L &P)	3	3	3	3	3	1	2	3	3
	Ocular Diseases 1 (102)	3	3	3	3	3	2	3	3	3
	Anterior Segment Diagnostic (103 L & P)	3	3	3	3	3	2	3	3	3
	Optometry Directed Clinical Education-I (104 CP)	3	3	3	3	3	3	3	3	3
Semester 2	Ocular Diseases and Diagnostics II (105 L & P)	3	3	3	3	3	2	2	3	3
	Advanced Contact Lenses I	3	3	3	3	3	3	3	3	3
	Binocular Vision and Pediatric Optometry	3	3	3	3	3	3	3	3	3
	Low vision and Geriatric Optometry	3	3	3	1	3	3	3	3	3
	Optometry Directed Clinical Education- (109CP)	3	3	3	2	3	3	3	3	3
	Research Methodology & Biostatistics (CC001)	3	3	3	3	3	3	3	3	3
	Basics of Clinical Skills Learning (CEC002)	3	3	3	3	2	3	3	3	3
	Hospital Operation Management (CEC003)	3	3	3	1	2	3	3	3	3
Semester 3	Advanced Dispensing Optics (110 L & P)	3	3	3	3	3	3	3	3	3
	Advanced Contact Lenses II(111L & P)	3	3	3	3	3	3	3	3	3
	Visual Perception, Neuroscience and Psychophysics (112 L)	3	3	3	3	3	3	3	3	3
	Applied Vision Therapy (113L & P)	3	3	3	3	3	3	3	3	3
	Optometry Directed Clinical Education-III (CP 114)	3	3	3	3	3	3	3	3	3
Semester 4	Pursuit of Innerself Excellence (POISE)	1.0	1.0	2.0	1.0	3.0	3.0	2.0	3.0	2
	Disaster management and Mitigation Resources	2.0	2.0	2.0	1.0	2.0	1.0	2.0	3.0	2
	Human Rights	2.0	2.0	2.0	1.0	1.0	1.0	3.0	3.0	2

PO CO Relationship

Programe - M.Optometry

Sem I to IV

Semester	Course & Course code	CO	Details	CO & PO Relationships	Domain		Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 1	Epidemiology Public health & Community Eye Health (101 L &P)	CO1	To have a thorough understanding of epidemiological concepts.	PO1,PO3,PO4,PO6,PO8	C	2.0	5.0	16.7	-	-	10.0	16.7	15.0	16.7	1.0
		CO2	To have a thorough understanding of conducting of screening for specific eye conditions, and resultant implications through theoretical and practical exposure	PO1,PO3,PO5,PO6,PO8	C.A.P	4,6	12.0	40.0	-	-	20.0	33.3	32.0	35.6	2.0
		CO3	To understand role of optometrists in community eye health	PO1,P02,PO3,PO4,PO5,PO6,PO7,PO8	C.A.P	1,3,5	13.0	43.3	-	-	30.0	50.0	43.0	47.8	2.0
		Total					30.0	####	-	-	60.0	####	90.0	100.0	3.0
	Ocular Diseases 1 (102)	CO1	To be able to diagnose anterior segment Ocular abnormalities	P01,PO2,PO3,PO4,PO5,PO6,PO7,PO8	C.A.P	1.0	40.0	66.7	-	-	-	-	40.0	66.7	3.0
		CO2	To be able to manage and co-manage therapeutics for anterior segment	P01,PO2,PO3,PO4,PO5,PO6,PO7,PO8	C.A.P	1.0	20.0	33.3	-	-	-	-	20.0	33.3	2.0
		Total					60.0	####	-	-	60.0	####	60.0	100.0	3.0
	Anterior Segment Diagnostic (103 L & P)	CO1	To be able to perform and interpret corneal diagnostics including, Topography/Pentacam/Orbscan, Secular microscopy,Tachymetry, Abberometry, A-Scan OCT UBM ,	PO1,PO2,PO3,PO4,PO5,PO6,PO7,PO8	C.A.P	1.0	30.0	50.0	15.0	50.0	20.0	66.7	65.0	54.2	3.0
		CO2	To be able to interpret glaucoma diagnostic reports OCT, HRT, Gonioscopy, and ONH evaluation.	PO1,PO2,PO3,PO4,PO5,PO6,PO7,PO8	C.A.P	1.0	15.0	25.0	5.0	16.7	5.0	16.7	25.0	20.8	1.0
		CO3	To be able to perform anterior segment photography and ophthalmic imaging	PO1,PO2,PO3,PO4,PO5,PO6,PO7,P	C.A.P	1.0	15.0	25.0	10.0	33.3	5.0	16.7	30.0	25.0	1.0
		Total					60.0	####	30.0	####	30.0	####	120.0	100.0	3.0
	Optometry Directed Clinical Education-I (104 CP)	CO1	Students will demonstrate competence in basic, intermediate and Advance procedures.	PO1,PO2,PO3,PO4,PO5,PO6,PO7,PO8	C.A.P	1.0	-	-	-	-	####	####	315.0	100.0	3.0
		Total					-	-	-	-	####	####	315.0	100.0	3.0

Semester	Course & Course code	CO	Details	CO & PO Relationships	Domain		Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 2	Ocular Diseases and Diagnostics II (105 L & P)	CO1	To be able to perform and interpret posterior segmentent diagnostic procedures.	PO1,PO2,PO3,PO4,PO5,PO6,PO7,P08	C.A.P	2,3	30.0	66.7	10.0	66.7	8.0	53.3	48.0	64.0	3.0
		CO2	To be able to diagnose and co-manage diseases and disorders of posterior segmen	PO1,PO2,PO3,PO4,PO5,PO6,PO7,P08	C.A.P	1.0	15.0	33.3	5.0	33.3	7.0	46.7	27.0	36.0	2.0
		Total					45.0	####	15.0	####	####	####	75.0	100.0	3.0
	Advanced Contact Lenses I	CO1	•To be able to understand corneal physiology and oxygen needs	PO1,PO3,PO4,PO6,PO8	C	1,2	8.0	26.7	5.0	33.3	-	-	13.0	21.7	1.0
		CO2	To be able to fit specialized contact lenses for various ocular conditions	PO1,PO2,PO3,PO4,PO5,PO6,PO7,P08	C.A.P	5.0	15.0	50.0	5.0	33.3	10.0	66.7	30.0	50.0	3.0
		CO3	To be able to diagnose and manage complications due to contact lenses	PO1,PO2,PO3,PO4,PO5,PO6,PO7,P08	C.A.P	3,4	7.0	23.3	5.0	33.3	5.0	33.3	17.0	28.3	1.0
		Total					30.0	####	15.0	####	15.0	####	60.0	100.0	3.0
	Binocular Vision and Pediatric Optometry	CO1	To be able to diagnose and manage and co-manage binocular vision anomalies	PO1,PO2,PO3,PO4,PO5,PO6,PO7,P08	C.A.P	1,2,4,	30.0	50.0	10.0	50.0	25.0	62.5	65.0	54.2	3.0
		CO2	•To be able to diagnose and co-manage visual perceptual anomalies	PO1,PO2,PO3,PO4,PO5,PO6,PO7,P08	C.A.P	3,5,6	30.0	50.0	10.0	50.0	15.0	37.5	55.0	45.8	2.0
		Total					60.0	####	20.0	####	40.0	####	120.0	100.0	3.0
	Low vision and Geriatric Optometry	CO1	• To be able to diagnose and manage patients with vision impairment	PO1,PO2,PO3,PO5,PO7,P08	C.A.P	1,2	14.0	46.7	7.0	35.0	10.0	25.0	31.0	34.4	2.0
		CO2	To be able to perform specialized diagnostics for patients with low vision and with multiple disabilities	PO1,PO2,PO3,PO4,PO5,PO6,PO7,P08	C.A.P	3.0	6.0	20.0	6.0	30.0	15.0	37.5	27.0	30.0	2.0
		CO3	• To be able to train for eccentric viewing and steady eye technique	PO1,PO2,PO3,PO4,PO5,PO6,PO7,P08	C.A.P	4.0	5.0	16.7	7.0	35.0	10.0	25.0	22.0	24.4	1.0
		CO4	To be able to rehabilitate patients with VI with vocational counseling and activities of daily living	PO1,PO2,PO3,PO5,PO7,P08	C.A.P	5.0	5.0	16.7	-	-	5.0	12.5	10.0	11.1	1.0
		Total					30.0	####	20.0	####	40.0	####	90.0	100.0	3.0

Semester	Course & Course code	CO	Details	CO & PO Relationships	Domain		Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 2	Optometry Directed Clinical Education-	CO1	Students will demonstrate competence in basic, intermediate and Advance procedures.	PO1,PO2,PO3,PO4,PO5,PO6,PO7,P	C.A.P	1.0	-	-	####	####	####	####	225.0	100.0	3.0
		Total					-	-	####	####	####	####	225.0	100.0	3.0
	Research Methodology & Biostatistics (CC001)	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,PO6,PO8	C.A	1 -15,	60.0	####	60.0	####	-	-	120.0	100.0	3.0
		Total					60.0	####	60.0	####	-	-	120.0	100.0	3.0
	Basics of Clinical Skills Learning (CEC002)	CO1	After successful accomplishment of the course, the students would be able to Measure Vital Signs, do basic physical Examination of the patients, NG tube basics, Administration of Medicines	PO1,PO2,PO3,PO5,PO6,,P08	C.A	1-4,	35.0	77.8	-	-	-	-	35.0	77.8	3.0
		CO2	The students will learn about Asepsis, and the Cleanliness related to asepsis and on mobility of the patients	PO1,PO2,PO3,PO5,PO6,,P08	C.A.P	5,6	10.0	22.2	-	-	-	-	10.0	22.2	1.0
		Total					45.0	####	-	-	-	-	45.0	100.0	3.0
	Hospital Operation Management (CEC003)	CO1	Understand and apply resource management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors	PO1,PO3,PO4,PO6,PO8	C.A	1,2	15.0	33.3	-	-	-	-	15.0	33.3	2.0
		CO2	Communicate effectively and develop their leadership and teambuilding abilities	PO1,PO3,PO4,PO6,PO8	C.A	3.0	10.0	22.2	-	-	-	-	10.0	22.2	1.0
		CO3	Apply modern change management and innovation management concepts to optimize structures	PO1,PO3,PO4,PO6,PO8	C.A.P	4.0	10.0	22.2	-	-	-	-	10.0	22.2	1.0
		CO4	Analyze existing hospital service policies and enhance their alignment within the local and national context	PO1,PO3,PO4,PO6,PO8	C	5.0	10.0	22.2	-	-	-	-	10.0	22.2	1.0
		Total					45.0	####	-	-	-	-	45.0	100.0	3.0
Semester 3	Advanced Dispensing Optics (110 L & P)	CO1	To design and dispense appropriate eyewear for a variety of patients.	PO1-8	C.A.P	1-5,	22.0	48.9	23.0	76.7	-	-	45.0	60.0	3.0
		CO2	To demonstarte knowledge about troubleshooting and patient handling	PO1-8	C.A.P	6,7	23.0	51.1	7.0	23.3	-	-	30.0	40.0	2.0
		Total					45.0	####	30.0	####	-	-	75.0	100.0	3.0
	Advanced Contact Lenses II(111L & P)	CO1	To be able to fit specialized contact lenses for various ocular conditions	P01-8	C.A.P	,2,4-12,	24.0	80.0	5.0	50.0	10.0	50.0	39.0	65.0	3.0

Semester	Course & Course code	CO	Details	CO & PO Relationships	Domain		Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 3	Pursuit of Innerself Excellence (POISE)	CO2	To be able to diagnose and manage complications due to contact lenses	P01-8	C.A.P	3,13,14	6.0	20.0	5.0	50.0	10.0	50.0	21.0	35.0	2.0
		Total					30.0	####	10.0	####	20.0	####	60.0	100.0	3.0
	Visual Perception, Neuroscience and Psychophysics (112 L)	CO1	To obtain a knowledge about functional antomy and neuro physiological aspects of the visual systems	PO1,PO3,PO4,PO6,PO8	C.A	,7,11,14	20.0	66.7	-	-	-	-	20.0	66.7	3.0
		CO2	To understand the neural activities associated with visual perception and visually guided behaviour for diagnosis, management and neuro optometric rehabilitation of patients	PO1,PO3,PO4,PO6,PO8	C.A	0,12,15	10.0	33.3	-	-	-	-	10.0	33.3	2.0
		Total					30.0	####	-	-	-	-	30.0	100.0	3.0
	Applied Vision Therapy (113L & P)	CO1	To demnostrate knowledge of the unique qualities, scientific, and clinical principles of each clinical condition.	PO1,PO3,PO4,PO6,PO8	C.A	1,2	6.0	10.0	-	-	-	-	6.0	6.7	1.0
		CO2	. To identify the characteristic history, signs and symptoms for each clinical condition	PO1,PO2,PO3,PO5,PO7,P08	C.A.P	3.0	5.0	8.3	2.0	18.2	6.0	31.6	13.0	14.4	1.0
		CO3	to assess each clinical condition, including specific test protocols and their interpretation	PO1,PO2,PO3,PO5,PO7,P08	C.A.P	3.0	5.0	8.3	2.0	18.2	6.0	31.6	13.0	14.4	1.0
		CO4	The specific treatment and management of each clinical condition including: Prognostic indicators , Treatment options , Duration and frequency of treatment , Treatment philosophy and goals , Specific lens treatment and therapy procedures including rationale for treatment ,Ergonomics and visual hygiene , Outcomes to determine successful completion of treatment ,Frequency of follow-up care and patient instructions , Referral criteria (medical, neurological, educational, etc.)	P01-8	C.A.P	4-10,	44.0	73.3	7.0	63.6	7.0	36.8	58.0	64.4	3.0
		Total					60.0	####	11.0	####	19.0	####	90.0	100.0	3.0
	Optometry Directed Clinical Education-III (CP 114)	CO1	Students will demonstrate competence in basic, intermediate and Advance procedures.	PO1,PO2,PO3,PO4,PO5,PO6,PO7,P08	C.A.P	1.0	-	-	####	####	####	####	225.0	100.0	3.0
		Total					-	-	####	####	####	####	225.0	100.0	3.0

Semester	Course & Course code	CO	Details	CO & PO Relationships	Domain		Lecture		Lab		Clinical		Total		Strength Level of CO addressing to PO Level 3:>50%, Level 2: 30%-50%, Level
				PO1-PO8	C.A.P	No	Hrs	%	Hrs	%	Hrs	%	Hrs	%	
Semester 4	Pursuit of Innerself Excellence (POISE)	CO1	Students will become self dependent, more decisive and develop intuitive ability for their study and career related matter.	PO2,PO3,PO5PO6,PO8	C,A	3.0	15.0	25.0	-	-	-	-	15.0	25.0	1.0
	Pursuit of Innerself Excellence (POISE)	CO2	Enhanced communication skills, public speaking & improved Presentation ability.	PO2,PO3,PO5PO6,PO8	C,A	4.0	15.0	25.0	-	-	-	-	15.0	25.0	1.0
		CO3	Development of personal attributes like Empathy, Compassion, Service, Love, brotherhood and Team work abilities	PO2,PO3,PO5PO6,PO8	C,A	1,2	30.0	50.0	-	-	-	-	30.0	50.0	3.0
		Total					60.0	####	-	-	-	-	60.0	100.0	3.0
Semester 4	Disaster management and Mitigation Resources	CO1	Understand the world-wide distribution of hazards and disasters and know the similarities and differences between natural and technological disasters.	PO1,PO2,PO3,PO5,PO6,PO7,PO8	C,A,P	1,2	23.0	38.3	-	-	-	-	23.0	38.3	2.0
		CO2	Acquire mitigation skills that help communities reduce the amount of damage and loss from disaster.	PO1,PO2,PO3,PO5,PO6,PO7,PO8	C,A,P	5.0	12.0	20.0	-	-	-	-	12.0	20.0	1.0
		CO3	Gain preparedness skills that increase community effectiveness in responding to disaster.	PO1,PO2,PO3,PO5,PO6,PO7,PO8	C,A,P	3,4	25.0	41.7	-	-	-	-	25.0	41.7	2.0
		Total					60.0	####	-	-	-	-	60.0	100.0	3.0
	Human Rights	CO1	Demonstrate a good understanding of the provisions under the Constitution of India dealing with human rights.	PO1,PO2,PO7,PO8	C,A	3.0	12.0	20.0	-	-	-	-	12.0	20.0	1.0
		CO2	Promote human rights through legal as well as non-legal means.	PO1,PO2,PO7,PO8	C,A	4.0	13.0	21.7	-	-	-	-	13.0	21.7	1.0
		CO3	Participate in legal, political and other debates involving human rights in a knowledgeable and constructive way	PO1,PO2,PO7,PO8	C,A	1,2,5	35.0	58.3	-	-	-	-	35.0	58.3	3.0
		Total					60.0	####	-	-	-	-	60.0	100.0	3.0

CO PO Matrix	
Programe - MHA - MASTERS IN HOSPITAL ADMINISTRATION	
Sem I to IV	
PO1.	Knowledge & Skill Development - an ability to apply knowledge of healthcare technology (Including, clinical subjects,investigations/procedures,handling instruments
PO2.	Critical Thinking – To apply professional judgment and rational thinking in decision-making
PO3.	Problem solving – Correlation of professional knowledge applied to current clinical or healthcare practices.
PO4.	Professional ethics – To adopt and apply code of ethics prescribed by professional bodies in professional and social context. Maintain appropriate boundaries with patients and care givers and maintain confidentiality.
PO5.	Communication skills – To communicate effectively with the patients, care givers and other healthcare professional for addressing patient related issues and to deliver and information
PO6.	Individual / Team work - ability to function on multi-disciplinary teams
PO7.	Holistic development: Development of intellectual mental, Physical, Emotional & Social abilities, so as to be capable of facing the demands & challenges of every day life.
PO8.	Lifelong learning - To develop continuous learning attitude in context of research, advances in clinical practices and to inculcate professionalism and evidence based practices
PO Mapping same with correlation level 3,2,1 The notation of 1 - low, 2 - moderate , 3 - high	

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 1	Epidemiology and demography MHA 101T	CO1	Dealing with public health problems and its determinants. Will be able to apply their skills in the discipline	3	2	3	3	2	3	3	2	2.625
		CO2	Support the healthcare system by understanding the distribution and determination of disease control	2	3	3	2	2	2	3	2	2.375
		CO3	To apply the inputs of statistics such as statsitic of births, deaths, marriage etc in drafting policies or operational plan	2	2	2	2	2	2	3	2	2.125
		CO4	Understanding the relationship between demography and its effect on public health	3	2	3	2	2	2	3	1	2.25
		Average		2.5	2.25	2.75	2.25	2	2.25	3	1.75	2.3
	Health Economics MHA 102T	CO1	Understanding the dynamics of economics in healthcare	3	3	2	3	2	2	3	2	2.5
		CO2	Understanding the demands and necessary inputs to be made available as hospital administrators	2	3	3	2	2	3	3	1	2.375

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 1	Health Economics MHA 102T	CO3	Understanding the stakeholders and their behaviour in healthcare market	2	3	2	3	3	2	3	2	2.5
		CO4	To develop skills and to understand the issues related to effectiveness , value and behavior of production and consumption of health and healthcare.	3	3	2	3	2	2	3	2	2.5
		Average		2.5	3	2.25	2.75	2.25	2.25	3	1.75	2.46875
	Business communication MHA 103T	CO1	Understanding of etiquette and protocol of verbal and written communication for effective business interaction	3	3	2	3	3	2	2	3	2.625
		CO2	Understanding of critical skills of business communication and business writing	2	2	2	3	3	2	2	2	2.25
		Average		2.5	2.5	2	3	3	2	2	2.5	2.4
	Health Care System and Policies & Health Surveys MHA 104T	CO1	Decisions related to policies which has to deal with healthcare as macro system	3	3	3	2	2	2	3	3	2.625
		C02	Based on their knowledge will be able to guide the colleague and healthcare stake holders about operational activities	3	3	3	3	2	3	2	2	2.625
		C03	knowing about healthcare system on different levels and different national health programes	3	3	2	3	2	2	3	3	2.625
		C04	Applying the health surveys whenever and wheever it is needed	3	3	3	3	2	3	3	3	2.875
		Average		3	3	2.75	2.75	2	2.5	2.75	2.75	2.6875
	Principles of management MHA 105T	CO1	Learning about management and basics , which will help them about managing healthcare industry	3	3	3	3	3	3	2	1	2.625
		CO2	Acquire the skills - sets of managers	3	3	3	3	3	3	2	2	2.75

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 1	Principles of management MHA 105T	CO3	Having a strong understanding about basic management principles	3	3	3	3	3	3	3	2	2.875
		CO4	Applying the management functions in the organisation. Practice of management will help them to become a successful administartor	3	3	3	3	3	3	3	3	3
		Average		3	3	3	3	3	3	2.5	2	2.8125
	Orientation of Hospital Industry MHA 106 T	CO1	Understanding about healthcare organisations in hospitals , clinics , nursing homes and other healthcare facilities	3	2	2	3	2	3	2	2	2.375
		CO2	knowing the difference in the operational and dimensional aspect of all stake holders of hospital industry	2	2	2	3	3	2	2	2	2.25
		CO3	They would also be able to work for public health organisations , pharmaceutical companies and other organisations	3	2	3	2	2	2	3	2	2.375
		CO4	Taking responsibility of managing specific departments such as admissions or supportive roles	3	3	3	2	2	2	2	1	2.25
		Average		2.75	2.25	2.5	2.5	2.25	2.25	2.25	1.75	2.3
Semester 2	Research Methodology MHA 208T	CO1	Arranging select from, use and interpret results of, descriptive statistcal methods effectively	3	2	2	2	2	2	2	3	2.25
		CO2	Demonstrate an understanding of the central concepts of modern statistical theory and their probabilistic foundation	2	2	2	2	3	3	2	3	2.375
		CO3	Select from, use and interpret results of, the principle methods of statistical interference and design	3	3	2	1	1	1	2	3	2
		C04	Communicating the results of statistical analysis accurately and effectively	3	2	1	1	3	3	2	3	2.25
		CO5	Reading and learning new statistical procedures independently.	3	2	1	1	1	1	2	3	1.75
		Average		2.8	2.2	1.6	1.4	2	2	2	3	3

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 2	Hospial Planning and Management MHA 209T	CO1	Understanding about hospital and facility	3	2	2	3	1	1	3	1	2
		CO2	learning about the operational aspect of hospital industry.	3	3	3	3	2	2	2	1	2.375
		CO3	learning about hospital,its operation,facilities so that they can work in the areas of formulating policies,planning operational action plans and become a succesful administrator.	3	3	3	3	2	2	2	2	2.5
		CO4	Taking up responsibilities of managing specific departments, such as admissions or supportive roles.	3	3	3	2	3	2	1	1	2.25
		Average		3	2.75	2.75	2.75	2	1.75	2	1.25	2.3
	Organisational Behaviour MHA 210T	CO1	Learning about dealing with human being at the organization. Managing healthcare industry by learning multidisciplinary work force work for a common goal	3	3	3	3	3	3	3	2	2.875
		CO2	Acquiring the skill-sets of managers	3	3	3	3	3	3	3	2	2.875
		CO3	Having a strong understanding about leadership. Team behaviour and related implications of human principles in healthcare industry.	2	3	3	2	3	3	3	2	2.625
		CO4	To apply the management functions in the organization. To practice human resource management, will help to become a successful administrator.	3	3	3	3	3	3	3	2	2.875
		Average		2.75	3	3	2.75	3	3	3	2	2.8
	Managerial Communication MHA 211 T	CO1	To apply the critical skills of managerial communication.	3	3	3	2	3	3	2	1	2.5
		CO2	learning basic communication at the work place .	3	3	1	2	3	3	2	1	2.25
		CO3	To communicate approriately	2	3	3	3	3	3	3	1	2.625

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 2	Managerial Communication MHA 211 T	CO4	Ensuring the leaarning of etiquette and protocol of verbal communication for effective business interactions.	3	3	3	3	3	3	3	2	2.875
		Average		2.75	3	2.5	2.5	3	3	2.5	1.25	2.6
	Accounting and costing MHA 212T	CO1	Learning about the process of analysis, recording, classifying and evaluating various alternative courses of cost.	2	3	3	1	1	2	2	2	2
		CO2	Learning the basic accounts,balance sheet,profit and loss and statement sheets. Understanding importance of finance and accounting in management.	3	3	3	2	1	1	3	1	2.125
		Average		2.5	3	3	1.5	1	1.5	2.5	1.5	2.1
	Management information system MHA 213 T	CO1	Learning about the computer, will be able to use it for the value addition in the hospital and healthcare organisation .	3	3	1	2	1	1	1	1	1.625
		CO2	use of computer and logic development for programming will help to create value added activity and	2	2	3	2	2	2	2	1	2
		CO3	Understanding the application software used in different offices and department in a hospital	3	2	1	1	1	2	3	1	1.75
		Average		2.7	2.3	1.7	1.7	1.3	1.7	2	1	1.8
	Human Resource Management MHA 214 T	CO1	Dealing with human being and the organization , enabling for managing healthcare industry in multidisciplinary workforce work	3	3	2	2	3	3	2	1	2.375
		CO2	Acquiring the skill-sets of managers	2	2	2	3	3	3	2	1	2.25

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 2	Human Resource Management MHA 214 T	CO3	Strong understanding about leadership, team behaviour and related implications of human principles in healthcare industry. Applying the management functions in the organizations.	3	3	3	3	3	3	3	1	2.75
		Average		2.7	2.7	2.3	2.7	3	3	2.3	1	2.5
	Project Management MHA 215 T	CO1	Empowering to plan, organize, lead and control any projects	3	2	2	3	3	3	2	1	2.4
		CO2	able to use the tools of project management	2	2	2	2	1	3	2	1	1.9
		CO3	able to take a proactive role and prove their skill set for a better healthcare administrators	3	3	2	3	2	2	2	1	2.3
		Average		2.7	2.3	2	2.7	2	2.7	2	1	2.2
	Hospital Project MHA 216 P	CO1	Helps to identify some issues or challenges at the hospital and deal with it	3	3	3	2	2	2	3	3	2.6
		Average		3	3	3	2	2	2	3	3	2.6
Semester 3	Quality management & accreditation in hospital industry MHA 318 T	CO1	To understand about quality management in hopsitals and other healthcare facilities	3	3	3	3	2	2	2	1	2.4
		CO2	To know the Quality in operational activities and role of each stakeholder of hospital industry in maintaining qulality management	3	3	2	2	3	2	2	1	2.3
		C03	To take up responsibilities of managing specific departments in the hopsital for initiating, maintaining and controlling quality in the hospital	3	3	3	3	2	1	3	1	2.4
		Average		3	3	2.7	2.7	2.3	1.7	2.3	1	2.3
	Legal Framework in Hospital MHA 322T	CO1	Able to understand about the legal implications in the hospital	3	3	3	3	2	1	2	2	2.375
		CO2	Know all aspect of those area, which create or may create areas of legal consequences for the hospital	2	3	3	3	1	2	2	3	2.375

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 3	**Legal Framework in Hospital MHA 322T**	CO3	Able to understand, how to deal with such situations, where hospital is facing legal actions or may face such situations.	3	3	3	3	2	3	2	1	2.5
		CO4	Made aware and taught to be empowered to deal with legal issues	3	3	2	3	2	3	1	1	2.3
		Average		2.75	3	2.75	3	1.75	2.25	1.75	1.75	2.4
	Marketing management for hospital MHA323T	CO1	Able to understand about hospital marketing services	3	3	2	3	2	2	2	1	2.25
		CO2	Able to create marketing activities to maintain a better relationship with all stakeholders	3	2	3	3	3	2	2	1	2.375
		CO3	Empowered for creating better value proposition for the hospital	3	3	3	2	3	2	3	2	2.6
		CO4	Able to work in any organization, when given an opportunity for brand positioning .	2	3	2	3	2	3	2	1	2.3
		CO5	Take up responisibilities of managing hospital marketing services in any hospital	3	2	2	3	3	3	2	1	2.4
		Average		2.8	2.6	2.4	2.8	2.6	2.4	2.2	1.2	2.4
	Material management MHA 324T	CO1	Able to understand about hospital material management	3	3	2	3	3	2	2	3	2.6
		CO2	Able to understand about necessary inventories and its management in-house and outside by maintaining a better relationship with all stakeholders	2	3	2	2	3	3	2	2	2.4
		CO3	Feel empowered for creating better value proposition for the hospiatl through the better control of its inventory planning	2	3	3	2	2	2	3	1	2.3
		CO4	Take up responisibilities of managing hospital material planning in any hospital	3	3	2	2	2	2	2	1	2.1
		Average		**2.5**	**3**	**2.25**	**2.25**	**2.5**	**2.25**	**2.25**	**1.75**	**2.3**
	Financial management MHA 325T	CO1	Able to understand about hospital's financial aspects	3	2	2	2	1	2	2	1	1.875
		CO2	Able to understand the direct, indirect costs, investment and expenditures	3	3	3	3	2	2	3	1	2.5

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 3	**Financial management MHA 325T**	CO3	Feel empowered for financial decisions for the hospital	3	2	2	3	2	2	3	1	2.25
		CO4	Take up responisibilities of managing hospital financial services in any hospital	3	2	2	2	2	2	3	1	2.1
		Average		**3**	**2.25**	**2.25**	**2.5**	**1.75**	**2**	**2.75**	**1**	2.2
	Strategic management MHA 326 T	CO1	Able to understand about hospital strategic management	2	2	2	3	2	3	2	1	2.125
		CO2	Feel empowered for strategy management for the hospital	3	3	3	3	2	3	3	2	2.6125
		CO3	Able to work in any organization, when given an opportunity for leading positioning .	3	3	3	2	3	3	2	2	2.6
		CO4	Take up responsibilities of managing hospital departments in any hospital	3	3	2	3	3	3	2	1	1.8
		Average		**2.75**	**2.75**	**2.5**	**2.75**	**2.5**	**3**	**2.25**	**1.5**	**2.3**
	Medical technology management MHA 327 T	CO1	Able to understand about medical technology management	3	2	2	3	2	2	2	1	2.125
		CO2	Able to maintain effective operations in hospital by equipments and instruments	3	3	2	2	3	3	2	1	2.375
		CO3	Feel empowered by creating better maintenance of equipment and instruments of the hospital	2	2	2	2	2	2	2	1	1.875
		CO4	Take up responsibilities of managing hospital medical technoogy management in any hospital.	3	3	3	2	2	3	2	1	2.375
		Average		**2.75**	**2.5**	**2.25**	**2.25**	**2.25**	**2.5**	**2**	**1**	**2.1875**

Semester	Course / Course Code	Course Outcome	Course Outcome	Knowledge and skill	Critical Thinking & problem solving	Decision making	Research skill	Individual and team work	Communication skills	Code of ethics	Lifelong learning	Average
				PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	
Semester 4	**Disaster management and mitigation resources GE 003T**	CO1	Knowledge and understanding of the disaster phenomenon, its different contextual aspects, impacts and public health consequences	3	2	2	2	2	2	2	1	2
	Disaster management and mitigation resources GE 003T	CO2	Knowledge and understanding of the international strategy for disaster reduction (UN-ISDR) and to increase skills and abilities for implementing the disaster risk reduction (DRR) strategy	3	2	2	4	2	2	3	1	2.375
		CO3	Ensure skills and abilities to analyse potential effects of disasters and of the staregies and methods to deliver public health response to avert these effects	3	3	2	3	2	1	3	1	2.25
		Average		3	2.33333333	2	3	2	1.66666667	2.6667	1	2.208333

Mapping Average
Programe - MHA - MASTERS IN HOSPITAL ADMINISTRATION
Sem I to IV

SEMESTER	COURSE	PO1	P02	PO3	PO4	PO5	PO6	PO7	PO8	Average
Semester 1	Epidemiology and Demography	2.5	2.25	2.75	2.25	2	2.25	3	1.75	2.34375
	Health Economics	2.5	3	2.25	2.75	2.25	2.25	3	1.75	2.46875
	Business Communication	2.5	2.5	2	3	3	2	2	2.5	2.4375
	Health Care System and Policies and Health Survey	3	3	2.75	2.75	2	2.5	2.75	2.75	2.6875
	Principles Of Management	3	3	3	3	3	3	2.5	2	2.8125
	Orientation of Hospital Industry	2.75	2.25	2.5	2.5	2.25	2.25	2.25	1.75	2.3125
semester 2	Hospital Planning and Management	3	2.75	2.75	2.75	2	1.75	2	1.25	2.28125
	Organizational Behaviour	2.75	3	3	2.75	3	3	3	2	2.8125
	Managerial Communication	2.75	3	2.5	2.5	3	3	2.5	1.25	2.5625
	Accounting And Costing	2.5	3	3	1.5	1	1.5	2.5	1.5	2.0625
	Management Information System	2.666	2.333	1.666	1.666	1.333	1.666	2	1	1.79125
	Human Resource Management	2.666	2.666	2.333	2.666	3	3	2.333	1	2.458
	project Management	2.666	2.333	2	2.666	2	2.666	2	1	2.166375
	Resesrch Methodology And Biostatistics	2.8	2.2	1.6	1.4	2	2	2	3	2.125
Semester 3	Quality Management and Accreditation in Hospital	3	3	2.666	2.666	2.333	1.666	2.333	1	2.333
	Legal Framework in Hospital	2.75	3	2.75	3	1.75	2.25	1.75	1.75	2.375
	Marketing Management For Hospital	2.8	2.6	2.4	2.8	2.6	2.4	2.2	1.2	2.375
	Material Managemnt	2.5	3	2.25	2.25	2.5	2.25	2.25	1.75	2.34375
	Financial Management	3	2.25	2.25	2.5	1.75	2	2.75	1	2.1875
	Strategic Management	2.75	2.75	2.5	2.75	2.5	3	2.25	1.5	2.5
	Medical Technology Management	2.75	2.5	2.25	2.25	2.25	2.5	2	1	2.1875
Semester 4	Disaster management and mitigation resources	3	2.333	2	3	2	1.666	2.666	1	2.208125

MGM New Bombay College of Nursing, Navi Mumbai.
POs, COs Mapping & Outcome Analysis

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MGM NEW BOMBAY COLLEGE OF NURSING

5th Floor, MGM Educational Campus, Plot No. 1& 2, Sector-1

B.Sc Nursing Programme

Year	Course	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	Average
First Year	Anatomy & Physiology	CO1(A)	2										2
		CO2(P)		2									2
		CO3 (P)			2								2
	Nutrition	CO4(N)		3									3
		CO5(N)				3			3				3
		CO6B)	3										3
	Nursing Foundation	CO7		2	3								2.5
		CO8		2	3								2.5
		CO9		2	3								2.5
		CO10		2	3								2.5
	Psychology	CO11	0.5										0.5
		CO12	0.5										0.5
		CO13	0.5										0.5
		CO14			0.5								0.5
		CO15	0.5										0.5
	Microbiology	CO16	1										1
		CO17						1					1
		CO18	1										1
	English	CO19				3							3
		CO20							3				3
		CO21				3							3
	Introduction to computers	CO22							3				3
		CO23									3		3
Second Year	Sociology	CO24	2.8										2.8
		CO25	2.8										2.8
		CO26	2.8										2.8
		CO27						2.8					2.8
		CO28											
	Pharmacology, Pathology and Genetics	CO29	2.75										2.75
		CO30		2.75									2.75
		CO31			2.75								2.75
		CO32						2.75					2.75
	Medical & surgical Nursing -I	CO33		3	3						3	3	3
		CO34		3	3						3	3	3
		CO35		3	3						3	3	3
		CO36		3	3						3	3	3
	Community Health Nursing-I	CO37	3										3
		CO38						3					3
		CO39	3										3
	Communication & Education Technology	CO40				2							2
		CO41							2				2
		CO42							2				2
	Medical Sugical Nursing-II	CO43		3	3								3
		CO44		3	3								3
		CO45		3	3			3					3
		CO46		3	3								3

Third Year	Child health Nursing	CO47		3	3								3
		CO48		3	3								3
		CO49		3	3								3
		CO50		3	3								3
	Mental Health Nursing	CO51		3	3	3							3
		CO52		3	3	3							3
		CO53		3	3	3							3
		CO54		3	3	3							3
	Nursing Research And Statistics	CO55									2.75		2.75
		CO56									2.75		2.75
		CO57									2.75		2.75
		CO58									2.75		2.75
Fourth Year	Community Health Nursing-II	CO59								3			
		CO60						3					
		CO61						3					
		CO62							3				
	Management of Nursing Service and Education	CO63								2.97			2.97
		CO64								2.97			2.97
		CO65								2.97			2.97
	Obstetric & Gynecological Nursing	CO66		2.5	3								2.75
		CO67		2.5	3								2.75
		CO68		2.5	3								2.75
		CO69		2.5	3								2.75
		Average	2.9	2.9	3.0	2.8		2.9	2.3	3.0	2.9	3.0	2.8

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Post Basic B.Sc Nursing Programme- PO & CO Out come Analysis-AY 2020-2021													
Year	**Course**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**Average**
First Year	Nursing Foundation	CO1					3						3
		CO2					3						3
		CO3	3										3
	Biochemistry & Bio Physics	CO4	3										3
		CO5	3										3
	Psychology	CO6	0.9										0.9
		CO7	3		3								3
		CO8											
		CO9	3										3
		CO10			3								3
	Maternal Nursing	CO11	3										3
		CO12		3.0									3
		CO13		3.0									3
		CO14	3										3
	Child Health Nursing	CO15	3										3
		CO16			3								3
		CO17		3.0									3
		CO18		3.0									3
	Medical Surgical Nursing	CO19			3								3
		CO20		3.0									3
		CO21		3.0									3
	Microbiology	CO22	3										3
		CO23	3										3
		CO24						3					3
		CO25						3					3
	Nutrition & Dietics	CO26	3										3
		CO27			3								3
		CO28			3								3
		CO29		3.0									3
	English	CO30				3							3
		CO31				3							3
		CO32				3							3
	Sociology	CO33	1.3										1.3
		CO34	1.3										1.3
		CO35	1.3										1.3

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Second year		CO36						3					3
		CO37			3								3
	Community Health Nursing	CO38	2.87										2.87
		CO39			2.87								2.87
		CO40		3.0									3
		CO41		2.9									2.87
		CO42		2.9									2.87
	Mental Health Nursing	CO43	3										3
		CO44	3										3
		CO45						3					3
	Introduction to Nursing Education	CO46							2.3				2.3
		CO47							3				3
		CO48							2.3				2.3
		CO49							3				3
		CO50							3				3
	Introduction To Nursing Adminstration	CO51								3			3
		CO52								3			3
		CO53										3	3
	Introduction to Research and Statistics	CO54									2.75		2.75
		CO55									2.75		2.75
		CO56									2.75		2.75
		CO57									2.75		2.75
		Average	2.6	3.0	3.0	3.0	3.0	3.0	2.7	3.0	2.8	3.0	2.8

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M.Sc Nursing Programme									
PO & CO Outcome Analysis AY -2020-2021									
Year	**Course**	**Domain**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**Average**
First Year	Advance Nursing Practice	CO1					3		3
		CO2	3						3
		CO3	3			3	3		3
		CO4	3						3
		CO5					3		3
		CO6				3			3
	Nursing Education	CO7					3		3
		CO8	3						3
		CO9	3						3
		CO10				3			3
		CO11	3						3
	Nursing Research & Statistics	CO12			3				3
		CO13			3				3
		CO14					3		3
		CO15				3			3
	Clinical Speciality -I	CO16						3	3
		CO17						3	3
		CO18						3	3
		CO19						3	3
Second Year	Nursing Management	CO20		3					3
		CO21		3					3
		CO22				3			3
		CO23		3		3			3
	Clinical Speciality -II	CO24		3					3
		CO25		3					3
		CO26				3			3
		CO27		3		3			3
		Average	3	3	3	3	3	3	3

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M.Sc -Nurse Practitioner in Critical care Programme									
PO & CO Out come Analysis- AY 2020-2021									
Year	Course/Subject	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	Average
First Year	Research application and Evidence Based Practice In critical care	CO1			3				3
		CO2			3				3
		CO3			3				3
		CO4			3				3
	Advanced skills in leadership ,Management & Teaching	CO5					3	3.00	3
		CO6					3	3.00	3
		CO7					3	3.00	3
		CO8					3	3.00	3
	Advanced Pathophysiology & Pharmacology applied to critical care nursing	CO9			3				3
		CO10			3				3
		CO11				3			3
		CO12				3			3
	Advanced health physical assesment in critical care nursing	CO13	3	3		3.00			3
		CO14	3	3		3.00			3
		CO15	3	3		3.00			3
		CO16	3	3		3.00	3	3.00	3
		CO17	3	3		3.00	3	3.00	3
Second Year	Foundations of critical care nursing practice	CO18	3			3.00	3		3
		CO19	3			3.00	3		3
		CO20	3			3.00	3		3
		CO21	3			3.00	3		3
	Critical care nursing -I	CO22	3	3		3.00			3
		CO23	3	3		3.00			3
		CO24	3	3		3.00			3
	Critical care nursing -II	CO25	3			3.00	3		3
		CO26	3			3.00	3		3
		CO27	3			3.00	3		3
		CO28	3			3.00	3		3
		Average	3	3	3	3	3	3	3

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MGM Institute's University Department of Prosthetics & Orthotics, Navi Mumbai.

POs, COs Mapping & Outcome Analysis.

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Sector-01, Kamothe, Navi Mumbai - 410 209 Tel 022-27437829, Website: www.mgmudpo.edu.in

OUTCOME OF BPO PROGRAMME

Prosthetics & Orthotics is a unique field of Rehabilitation of Persons with Disabilities. The Prosthetics & Orthotics professionals are more concerned with the Persons of Locomotor Disabilities.

Bachelor's in Prosthetics & Orthotics is a professional degree Programme which is recognized by Rehabilitation Council of India (RCI), a government Statutory body.

The Curriculum is designed & implemented in such a way that after completion of B.P.O. Programme, the students can have Job opportunities in Multinational Companies, various National Institutions, Hospitals, academic institutes, Government organizations, Non-Government Organizations.

The students can pursue their higher studies also they can start their own clinic and become an entrepreneurs. They can work as a new Startup as well as they also can be part of research team for development of new innovations for Divyangjan.

Dr. Uttara Deshmukh (P&O)
Principal,
MGM Institute's University Department of Prosthetics & Orthotics
Kamothe, Navi Mumbai, Maharashtra

Dr. Uttara Deshmukh (P & O),
H. O. D. In-Charge,
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Kamothe, Navi Mumbai.

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OUTCOME ANALYSIS OF POs & COs FOR BPO PROGRAM

- The Institute has clearly stated program outcomes (POs) and course outcomes (Cos) for BPO Program.
- The Faculty and students are made aware of the learning outcomes at beginning of academic year.
- Analysis of Program outcomes is achieved by formative & summative assessments
- Log books and departmental journals are maintained by the students.
- The students and teachers are provided with academic calendar wherein planning is done for the entire year.

The institute has a well – structured feedback mechanism system. Feedback is obtained from all stakeholders such as students, teachers, employers, parents, alumni and professionals regarding curricular aspects, teaching learning processes, infrastructure, etc. The feedback is analysed at departmental level. After analysis, corrective actions are initiated. Evaluation of learning objectives includes both direct and indirect methods. The Direct methods include tests, presentation, laboratory work, student projects, seminars, Problem-based –Learning, assignments, progress reports after every Internal Examination, Logbook for students, submission work, Participation in competitive exams, intercollegiate competitions, and others.

The indirect methods include feedback from students, faculty members, employer or alumni, Job placement rates, self –evaluations.

The institution has formulated course outcomes to make the students more competent with respect to all domains of learning (Cognitive domains). Accordingly, their learning assessment is conducted in form of formative and summative assessment.

Students' feedback helps to raise the standards of educational and overall other provision for students, and encourages students to provide the Institute with thoughtful and constructive feedback. Formal evaluations, together with informal comments and consultations, are used to make improvements to our program and other provisions, and to provide encouragement to staff where appropriate. Our learning from student feedback is directed at providing :

(a) A safe, professional and friendly learning environment,
(b) Quality teaching, assessment and management of learning,
(c) Regular and reliable feedback on student progress and achievements;
(d) Mechanisms for students to pursue grievances and learning related issues as require.

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NAVI MUMBAI

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Modes of Assessment **Domain of learning - Cognitive**	**Methods of Assessment**	**Students**
1st Internal Assessment	**SAQ (3 Marks)**	**UG**
	SAQ (7 Marks)	
	LAQ (15 Marks)	
	Viva- Voce	
	Practical	
	Submissions	
	Journals	
	Presentations	
2nd Internal Assessment	**SAQ (3 Marks)**	**UG**
	SAQ (7 Marks)	
	LAQ (15 Marks)	
	Viva- Voce	
	Practical	
	Submissions	
	Journals	
	PPT Presentations	

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The curricula developed and implemented have relevance to Local, Regional, National and Global healthcare needs leading to well defined graduate attributes:

- **Dynamic Professionalism**
- **Exemplary leadership**
- **Communication skills**
- **Scholarly Attitude**
- **Element of Critical Thinking**
- **Enthusiasm for Research**
- **Social Commitment**
- **Global Competencies.**

The Annual Assessment is conducted at the University level which includes written & practical examination. The students' achievement is categorized into:

Levels	Percentage	Attainment of Outcomes
Level 0	Below (50%)	Unable to acquire all competencies (COs) of the respective course
Level 1	50-59%	Have acquired all competencies (COs) of the respective course.
Level 2	60-69%	
Level 3	70 % and above	

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BPO –I University Exam (2020-2021)

Anatomy			Physiology			Applied Mechanics			Workshop Technology			Biomechanics-I			Basic Electronics			Prosthetics-I			Orthotics-I		
Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%
Below 50% (Failed)	2	25	Below 50% (Failed)	3	37	Below 50% (Failed)	3	50	Below 50% (Failed)	0	0	Below 50% (Failed)	0	0	Below 50% (Failed)	2	25	Below 50% (Failed)	0	0	Below 50% (Failed)	0	0
50-59%	2	25	50-59%	4	50	50-59%	3	50	50-59%	3	38	50-59%	1	13	50-59%	3	38	50-59%	0	0	50-59%	0	0
60-69%	4	50	60-69%	1	13	60-69%	0	0	60-69%	3	38	60-69%	2	25	60-69%	2	25	60-69%	4	67	60-69%	2	33
70% and above	0	0	70% and above	0	0	70% and above	0	0	70% and above	2	24	70% and above	5	62	70% and above	1	12	70% and above	2	33	70% and above	4	67

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BPO –II University Exam (2020-2021)

Pathology			Orthopaedics & Amputation Surgery			Community Rehabilitation & Disability Prevention			Pharmacology			Biomechanics-II			Psychology & Sociology			Prosthetics-II			Orthotics-II		
Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%
Below 50% (Failed)	5	62	Below 50% (Failed)	7	100	Below 50% (Failed)	2	26	Below 50% (Failed)	6	75	Below 50% (Failed)	0	0	Below 50% (Failed)	5	62	Below 50% (Failed)	1	17	Below 50% (Failed)	1	16
50-59%	3	38	50-59%	0	0	50-59%	3	37	50-59%	2	25	50-59%	2	40	50-59%	3	38	50-59%	4	66	50-59%	1	17
60-69%	0	0	60-69%	0	0	60-69%	3	37	60-69%	0	0	60-69%	3	60	60-69%	0	-	60-69%	1	17	60-69%	4	67
70% and above	0	0	70% and above	0	0	70% and above	0	0	70% and above	0	0	70% and above	0	0	70% and above	0	-	70% and above	0	0	70% and above	0	0

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BPO –III University Exam (2020-2021)

Computer Science & Graphical communication			Biomechanics-III			Assistive Technology			Research Methodology & Biostatistics			Prosthetics-III			Orthotics-III		
Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%
Below 50% (Failed)	0	0	Below 50% (Failed)	2	8	Below 50% (Failed)	0	0	Below 50% (Failed)	1	6	Below 50% (Failed)	1	6	Below 50% (Failed)	0	0
50-59%	2	9	50-59%	4	18	50-59%	4	17	50-59%	6	35	50-59%	6	33	50-59%	2	11
60-69%	13	56	60-69%	6	26	60-69%	12	53	60-69%	10	59	60-69%	6	33	60-69%	7	39
70% and above	8	35	70% and above	11	48	70% and above	7	30	70% and above	0	0	70% and above	5	28	70% and above	9	50

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BPO –IV University Exam (2020-2021)

Prosthetic Science-IV			Orthotic Science-IV			Management & Administration			Prosthetic Clinical Practice			Orthotic Clinical Practice			Project Work		
Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%	Level	No of Students	%
Below 50% (Failed)	0	0	Below 50% (Failed)	0	0	Below 50% (Failed)	0	0	Below 50% (Failed)	0	0	Below 50% (Failed)	0	0	Below 50% (Failed)	0	0
50-59%	1	17	50-59%	0	0	50-59%	0	0	50-59%	0	0	50-59%	4	67	50-59%	0	0
60-69%	3	50	60-69%	4	67	60-69%	0	0	60-69%	6	100	60-69%	2	33	60-69%	5	83
70% and above	2	33	70% and above	2	33	70% and above	6	100	70% and above	0	0	70% and above	0	0	70% and above	1	17

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