ANALYSIS OF PROGRAMME OUTCOME AND COURSE OUTCOME

FACULTY OF ALLIED HEALTH SCIENCES

CHOICE BASED CREDIT SYSTEM (CBCS)

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INDEX

Program outcome and Course outcome analysis

Introduction:

Quality assurance is a key factor in education. This requires analysis of Program Outcome (PO) and Course Outcome (CO) mapping. This analysis is an important step in outcome based education. Faculty of Allied Health Sciences education is moving from traditional teaching learning process to innovative method of teaching and learning, this need to be incorporated in to the evaluation system. Besides analysing the mapping, to make it more objective a score need to be obtained for mapping and attainment score need to be calculated for each course and program. All these analysis help to monitor not only the performance of the program but also the individual students. This type of analysis is not routine in health careeducation.

Terminologies

Program educational objective (PEO)

Program Educational Objectives are broad statements that describe what graduates are expected to attain within few years of completing their program. These are based on the needs of the society as analyzed and outlined by the regulatorybodies.

Program Outcome (PO):

Program outcomes represent broad statements that incorporate many areas of inter-related knowledge and skills developed over the duration of the program through a wide range of courses and experiences. They represent the big picture, describe broad aspects of knowledge, skill and attitude development, and encompass multiple learning experiences.

Course Outcomes(CO):

Course outcomes describe the learning that will take place across the curriculum through concise statements, made in specific and measurable terms, of what students will know and/or be able to do as the result of having successfully completed a course.

Mapping of PEO, PO and the CO:

Mapping (program mapping) facilitates the alignment of course-level outcomes with program outcomes. It allows faculty to create a visual map of a program. It is also used to explore how students are meeting program-level outcomes at the course level. Outcomes mapping focuses on student learning also.

Attainment score or level:

Attainment score or level is defined as a measure of a student's achievement in school which compares every child to a standardized expectation for their level, regardless of individual starting points.

Bloom's Taxonomy:

Bloom's Taxonomy of Learning Domains was created in 1956 under the leadership of educational psychologist Dr. Benjamin Bloom in order to promote higher order of thinking in education. It is most often used when designing educational, training, and learning processes. The three Domains of Learning are (1) Cognitive: Mental Skills (Knowledge), (2) Affective: growth in feelings or emotional areas (attitude or self) and (3) Psychomotor: manual or physical skills (skills). **(Figure1)**

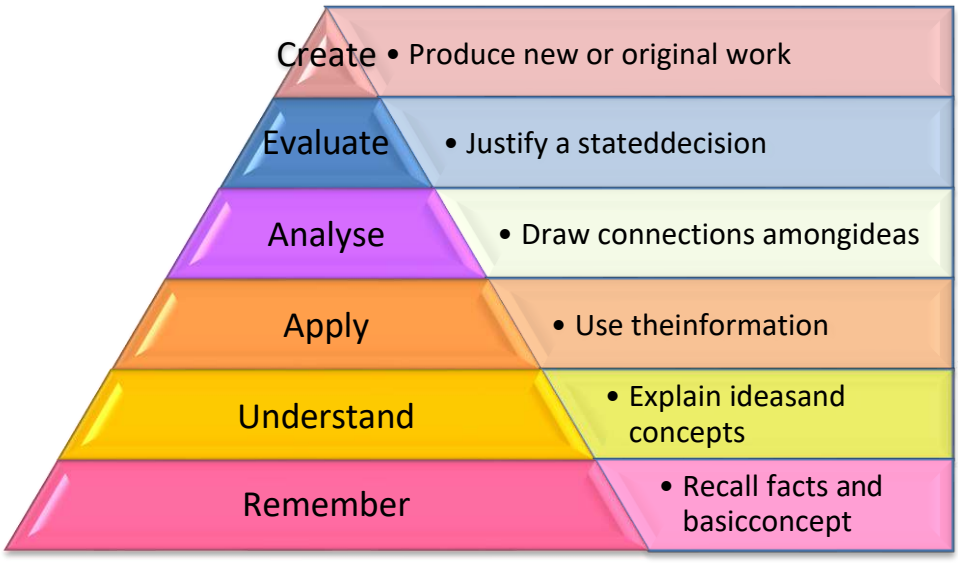

Figure. 1Bloom's taxonomy

Faculty of Allied Health Sciences under Mahatma Gandhi Medical College and Research Institute, Sri Balaji Vidyapeeth University, a health sciences university of Puducherry. It has provided the syllabus for various health care courses, where all courses have its own objectives and methodology to achieve the course outcomes. To attain the course outcomes and program outcome, the institutes use course wise marks of students and the pass percentage of the summative assessment.

UNDER GRADUATE PROGRAMMES

UNDER GRADUATE

1. B.Sc Medical ImagingTechnology

Program Educational Objectives (PEO)

Program educational objectives for under graduate program are as follows:

- **PEO1:** A technical expert who genuinely gets involved in patient care and does multi-task responsibilities.
- **PEO 2**: Communicators possessing adequate communication skills to convey the required information in an appropriate manner in various health care settings.
- **PEO 3:** Demonstrate basic administration/management and leadership skills.
- **PEO 4:** Lifelong learner is keen on updating oneself regarding the technical advancement in the health care field and able to perform the role of a good technologist and /or, researcher and teacher.
- **PEO 5:** Technologist who understands and follows the principle of bio-ethics / ethics related to the health care system.

Program outcome (PO)

At the end of the 4 year of training B.Sc MIT students should be able to

- **MITPO1:** Performs the duty as a medical technologist, mastering PRP-MPuter applications with good written & communication skills and also skilled at computer applications including E- library.
- **MITPO2:** To gain knowledge about radiation safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases.
- **MITPO3:** Understanding the structure and functions of different organs in normal humanbody.

- **MITPO4:** The learning objectives of this course is to understand radiation sources, types and its properties , production and properties of X-rays, radiation quantities and units used in theindustry.
- **MITPO5:** Phlebotomists are trained to draw blood primarily by performing venipunctures (for collection of minute quantities of blood and finger pricks)
- **MITPO6:** To study and understand about the radiographic positioning.
- **MITPO7:** Ability to perform urinalysis, Serology, haematology, cytology, blood banking, biochemical and microbiological parameters.
- **MITPO8:** To know the basics of reagent preparation, instrument handling and can perform common analytical in Clinical Biochemistry.
- **MITPO9:** To equip students regarding dark room facility, X-ray cassette and lean about film artifacts.
- **MITPO10:**To know different types of imaging modality such as MRI, PET scan, SPECT and also understand about quality assurance test, dosimetry tools
- **MITPO11:** To practice in-vitro study in radiology (GI tract, Billary Tract, Urinary System, Reproductive System, Cardiovascular System, Venography, Central Nervous System, Respiratory System, and Miscellaneous)
- **MITPO12**: various life style disorders and with due counseling& guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy.

Course (Cs)

B.Sc Medical Imaging Technology (MIT) program under the CHOICE BASED CREDIT SYSTEM consists of following core courses namely: 1stYear B.Sc MIT consists of Anatomy, Physiology, Biochemistry, Pathology, and Microbiology ; 2ndYear B.Sc MIT consists of, Radiological Physics, Radiographic Positioning, Ultrasound Imaging and Mammography and Interventional Procedure and Dental Radiography; 3rdYear B.Sc MIT consist of Computed Tomography, Magnetic Resonance Imaging, Nuclear Medicine Imaging and Quality Assurance, Radiation Biology & Radiation Hazards;

4th Year – One year Internship. Also a**s per the UGC guidelines, during the study period an Allied Health Science Student will be studying Two Ability Enhancement compulsory courses, four Skill enhancement courses, two Generic Elective Courses and two Discipline Elective Courses.** Thus the B.Sc Medical Laboratory Technology (MIT) program consists of following Electives courses, namely **Ability Enhancement compulsory course**

(AECC)consisting of English and Environmental studies, **Skill enhancement courses namely** Culinary Skills for optimal nutrition, Enhancing soft skill & personality, Basics of Yoga & Practice, Speaking effectively, Good Clinical Laboratory practice, Computer Applications, Library and E-resource and Public Health and Hygiene, **Generic Elective Course** namely Basics of Hospital Administration, Counseling and Guidance, Lifestyle Disorders, Basic Psychology, Sociology and Entrepreneurship essentials, **Discipline Elective Courses namely** Biomedical Waste Management, Basic Radiation Biology, Clinical imaging protocols of Computed Tomography (CT), Clinical imaging protocols of Radiography & Fluoroscopy and Clinical imaging protocols of Magnetic resonance imaging (MRI).Each course has its well defined course outcome mentioned in individual course book.

Mapping and analysis of Cs, POs and PEOs

The process of attainment of Cs, POs and PEOs starts from writing appropriate COs for each course in the three year plus one year internship degree program. As Undergraduate Allied Health Science program is Non-regulatory, COs and POs are defined by SBV norms. Based on this, course outcomes are refined by the respective faculty members of the course using action verbs of learning levels as suggested by Bloom Taxonomy. Then, a correlation is established between Cs and POs and Cs and PEOs on the scale of 0 to 3 (‘0‘being no correlation, 1 being the low correlation, 2 being medium correlation and 3 being high correlation) based on their perception. The average score is calculated and is correlated with the courses as a whole not individually. The core paper & Elective course 34 x 5 mapping matrix of COs-PEOs **(Table.1)** The core paper & Elective course of 34 x 12 mapping matrix of Cs-POs **(Table. 2)** is prepared at the institute level in this regard for all courses in the program. Radar graph was plotted to find out the level of correlation between PEO-Cs **(Fig.1)** and PO-Cs **(Fig.2**).

Table 1. CO-PEO Mapping matrix

S.NO	COURSE	PEO1	PEO2	PEO3	PEO4	PEO5
1.	Anatomy(AN)	3	2	2	2	3
2.	Physiology(PHY)	2	3	2	3	3
3.	Biochemistry(BIO)	2	2	3	3	3
4.	Pathology(PAT)	3	3	3	3	3
5.	Microbiology(MIC)	3	3	3	3	3
6.	English (ENG)	2	3	2	2	2
7.	Culinary Skills for optimal nutrition(NUTRI)	3	2	2	2	3
8.	Enhancing soft skill & personality(ESSP)	2	2	1	3	2

9.	Basics of Yoga & Practice	3	2	2	3	3
10.	Speaking effectively	3	3	2	3	2
11.	Basics of Hospital Administration(HOSP)	3	2	2	2	3
12.	Counseling and Guidance(COUNS)	2	2	1	3	2
13.	Lifestyle Disorders (LD)	3	2	2	3	3
14.	Radiological Physics	3	3	2	3	3
15.	Radiographic Positioning	3	3	3	3	2
16.	Ultrasound Imaging and Mammography	3	3	2	3	3
17.	Interventional Procedure and Dental Radiography	3	3	2	3	3
18.	Environmental studies	2	3	2	3	3
19.	Good Clinical Laboratory practice	3	3	3	2	3
20.	Computer Applications	3	2	1	3	2
21.	Library and E-resource	3	2	2	3	2
22.	Public Health and Hygiene	2	2	3	2	3
23.	Basic Psychology	3	2	2	3	3
24.	Sociology	2	3	3	3	2
25.	Entrepreneurship essentials	3	2	2	3	3
26.	Computed Tomography	3	3	3	3	3
27.	Magnetic Resonance Imaging	3	3	3	3	3
28.	Nuclear Medicine Imaging	3	3	3	3	3
29.	Quality Assurance, Radiation Biology & Radiation Hazards	2	3	2	3	2
30.	Biomedical Waste Management	3	3	2	3	3
31.	Basic Radiation Biology	3	2	3	2	2
32.	Clinical imaging protocols of Computed Tomography (CT)	3	3	2	3	3

33.	Clinical imaging protocols of Radiography & Fluoroscopy	3	2	2	3	3
34.	Clinical imaging protocols of Magnetic resonance imaging (MRI)	3	2	3	3	2
Average		**2.73**	**2.52**	**2.26**	**2.79**	**2.67**

CO-PEO Mapping

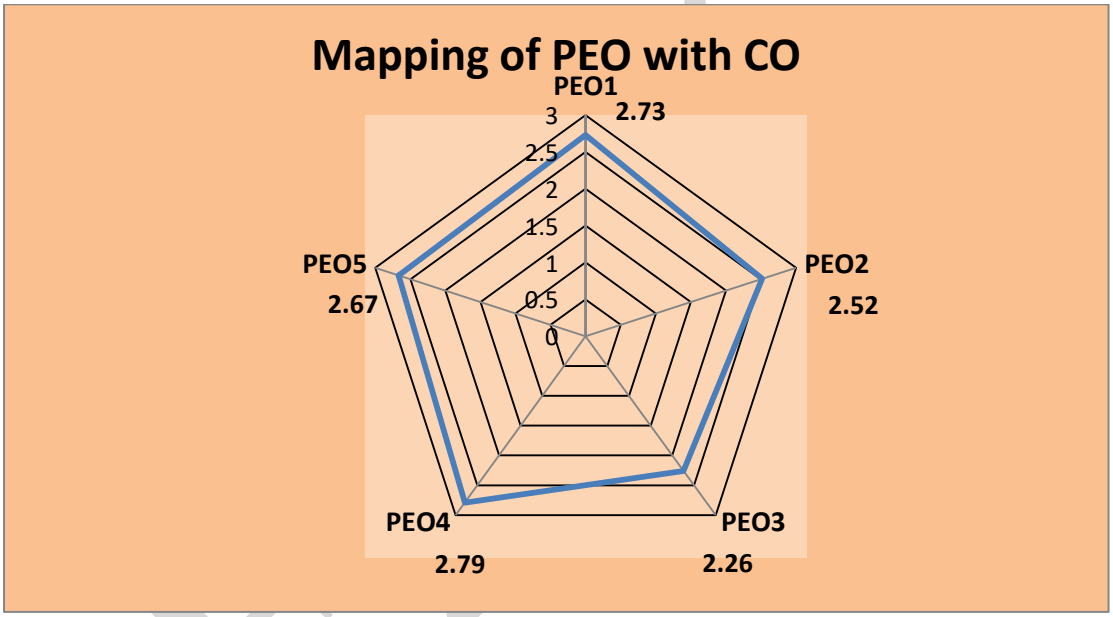

Figure 1. Mapping of Program educational objectives& course
(0 - no correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation)

Table 2. Cs-PO Mapping matrix

S.NO	COURSE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	P012
1.	Anatomy(AN)	3	2	3	3	2	1	1	2	2	2	2	1
2.	Physiology(PHY)	3	3	3	3	2	0	3	2	2	1	2	2
3.	Biochemistry(BIO)	3	2	2	3	3	3	3	2	2	3	2	2
4.	Pathology(PAT)	3	3	2	3	3	3	2	3	3	3	2	2
5.	Microbiology(MIC)	3	3	2	3	3	3	2	3	2	3	2	2

6.	English(ENG)	2	2	1	1	2	1	1	0	2	1	2	2
7.	Culinary Skills for optimal nutrition(NUTRI)	2	2	1	1	3	3	0	1	2	0	1	1
8.	Enhancing soft skill & personality(ESSP)	2	2	2	2	1	0	2	1	2	2	2	3
9.	Basics of Yoga & Practice	3	2	1	1	0	1	0	0	2	1	2	2
10.	Speaking effectively	2	2	1	2	0	3	2	1	2	2	1	1
11.	Basics of Hospital Administration (HOSP)	3	2	2	2	1	0	2	1	2	2	2	3
12.	Counseling and Guidance(COUNS)	3	2	2	2	0	1	1	2	2	1	2	2
13.	Lifestyle Disorders (LD)	2	2	2	1	2	3	0	1	2	3	1	1
14.	Radiological Physics (RPHY)	2	2	3	2	2	0	2	1	2	2	2	3
15.	Radiographic Positioning(RP)	3	3	2	3	3	3	3	3	1	3	2	3
16.	Ultrasound Imaging and Mammography(UIM)	3	2	3	3	3	3	3	3	3	2	3	3
17.	Interventional Procedure and Dental Radiography(IPDR)	3	2	3	3	3	3	3	3	3	2	3	2
18.	Environmental studies	3	2	2	1	2	3	1	1	2	2	1	3
19.	Good Clinical Laboratory practice	2	2	3	2	1	1	2	1	3	2	2	3
20.	Computer Applications	2	3	2	2	3	3	3	3	1	3	2	3
21.	Library and E-resource	2	2	3	2	2	3	2	2	2	0	1	1
22.	Public Health and Hygiene	3	2	1	1	2	3	1	1	2	2	1	3
23.	Basic Psychology	2	2	3	2	1	1	2	1	3	2	2	3
24.	Sociology	3	2	2	2	3	3	3	3	1	3	2	3

25.	Entrepreneurship essentials	3	2	3	2	2	3	2	1	2	2	1	3
26.	Computed Tomography	3	2	2	2	2	3	2	2	3	2	2	3
27.	Magnetic Resonance Imaging	3	2	3	2	2	3	2	3	3	2	3	3
28.	Nuclear Medicine Imaging	3	3	2	2	3	3	3	3	2	3	2	3
29.	Quality Assurance, Radiation Biology & Radiation Hazards	3	2	1	2	2	3	2	1	2	0	1	1
30.	Biomedical Waste Management	3	2	1	2	2	3	1	2	2	2	1	3
31.	Basic Radiation Biology	3	2	3	2	1	2	2	1	3	2	2	3
32.	Clinical imaging protocols of Computed Tomography (CT)	3	2	2	2	3	2	3	3	1	3	2	3
33.	Clinical imaging protocols of Radiography & Fluoroscopy	3	2	2	2	3	2	3	3	1	3	2	3
34.	Clinical imaging protocols of Magnetic resonance imaging (MRI)	3	2	1	2	3	2	3	2	1	3	2	3
AVERAGE SCORE		**2.64**	**2.17**	**2.08**	**2.05**	**2.05**	**2.17**	**1.97**	**1.94**	**2.08**	**2.02**	**1.91**	**2.14**

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation ;3 - High correlation).

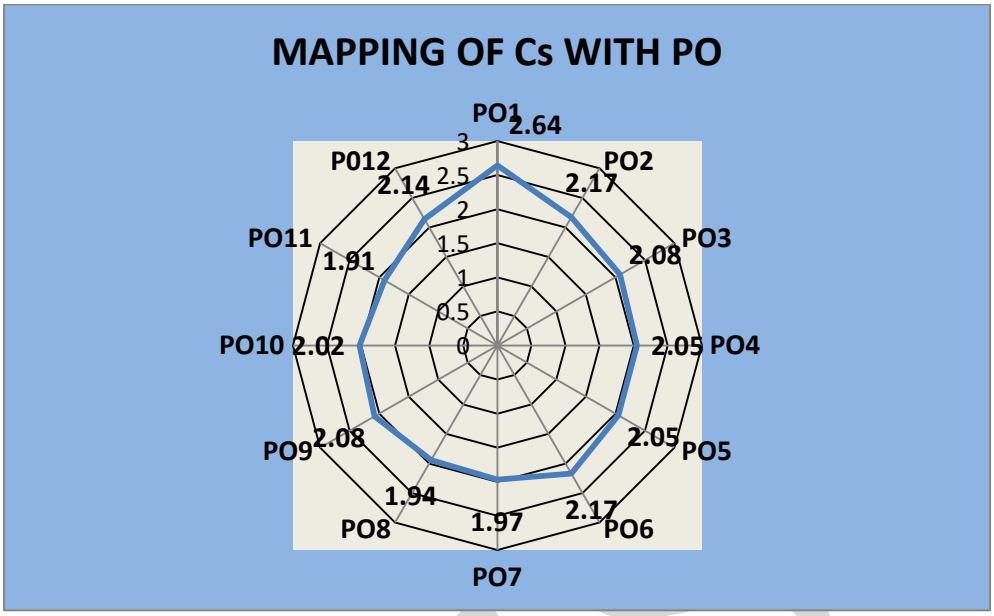

Figure 2. Mapping of Program outcome &course

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation)

Analysis of Cs, POs and PEOs:

On analyzing, the average score of individual program outcome ranges from 1.91 to 2.64. It shows, there exist a strong correlation of all Cs with that of PO1 & PO6, whereas medium correlation between Cs and PO7, PO9 & PO12. Similarly, on analyzing, the average score of individual program educational objectives ranges from 2.26 to 2.79. It shows, there exist a strong correlation of all Cs with that of PEO1 & PEO4, whereas medium correlation between Cs and PEO2, PEO3& PEO5.

UNDER GRADUATE

2. B.Sc Medical Laboratory Technology

Program Educational Objectives (PEO)

Program educational objectives for under graduate program are as follows:

- **PEO1:** A technical expert who genuinely gets involved in patient care and does multi-task responsibilities.
- **PEO 2**: Communicators possessing adequate communication skills to convey the required information in an appropriate manner in various health care settings.
- **PEO 3:** Demonstrate basic administration/management and leadership skills.
- **PEO 4:** Lifelong learner is keen on updating oneself regarding the technical advancement in the health care field and able to perform the role of a good technologist and /or, researcher and teacher.
- **PEO 5:** Technologist who understands and follows the principle of bio-ethics / ethics related to the health care system.

Program outcome (PO)

At the end of the 4 year of training B.Sc MIT students should be able to

MLTPO1: Performs the duty as a Medical Technologist with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library.

MLTPO2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases.

MLTPO3: Understanding the structure and functions of different organs in normal human body.

MLTPO4: Phlebotomists are trained to draw blood primarily by performing venipunctures (for collection of minute quantities of blood and finger pricks).

MLTPO5: Ability to perform all biological samples which include various staining techniques and to operate the patient's data in Hospital Information System (HIS) or WHONET.

MLTPO6: Ability to perform urinalysis, Serology, hematology, cytology, blood banking, biochemical, microbiological parameters and drug reactions.

MLTPO7: To know the basics of reagent preparation, instrument handling and can perform common analytical in Clinical & Molecular Biochemistry.

MLTPO8: To know the normal range of the individual biochemical and pathological tests

MLTPO9: Know how to follow sample acceptance and rejection criteria and also to pack, transport and store the samples.

MLTPO10: Recognize a patient requiring urgent or emergent care and initiate first Aid process.

MLTPO11: Demonstrate knowledge about the healthcare sector, diagnostic services and plays a vital role in Hospital infection control

MLTPO12: To identify various life style disorders and with due counseling& guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy.

Course (Cs)

B.Sc Medical Laboratory Technology (MLT) program under the CHOICE BASED CREDIT SYSTEM consists of following core courses namely: 1stYear B.Sc MLT consists of Anatomy, Physiology, Biochemistry, Pathology, and Microbiology ; 2ndYear B.Sc MLT consists of, General Bacteriology, Immunology, Systematic Bacteriology, Mycology, Blood Banking & Blood components and Hematology & Clinical Pathology; 3rdYear B.Sc MLT consist of Virology, Parasitology, Serology, Applied Microbiology, Entomology, Histopathology & Cytology and Clinical Biochemistry; 4th Year – One year Internship. Also a**s per the UGC guidelines, during the study period an Allied Health Science Student will be studying Two Ability Enhancement compulsory courses, four Skill enhancement courses, two Generic Elective Courses and two Discipline Elective Courses.** Thus the B.Sc Medical Laboratory Technology (MLT) program consists of following Electives courses, namely **Ability Enhancement compulsory course (AECC) consisting** of English and Environmental studies, **Skill enhancement courses namely** Culinary Skills for optimal nutrition, Enhancing soft skill & personality, Basics of Yoga & Practice, Speaking effectively, Good Clinical Laboratory practice, Computer Applications, Library and E-resource and Public Health and Hygiene, **Generic Elective Course** namely Basics of Hospital Administration, Counseling and Guidance, Lifestyle Disorders, Basic Psychology, Sociology and Entrepreneurship essentials, **Discipline Elective Courses namely** Biomedical Waste Management, Cell culture Technologies, Biochemistry & Molecular Biology and Pharmacology. Each course has its well defined course outcome mentioned in individual course book.

Mapping and analysis of Cs, POs and PEOs

The process of attainment of Cs, POs and PEOs starts from writing appropriate COs for each course in the three year plus one year internship degree program. As Undergraduate Allied Health Science program is Non-regulatory, COs and POs are defined by SBV norms. Based on this, course outcomes are refined by the respective faculty members of the course using action verbs of learning levels as suggested by Bloom Taxonomy. Then, a correlation is established between Cs and POs and Cs and

PEOs on the scale of 0 to 3 (‘0‘being no correlation, 1 being the low correlation, 2 being medium correlation and 3 being high correlation) based on their perception. The average score is calculated and is correlated with the courses as a whole not individually. The core paper & Elective course 31 x 5 mapping matrix of COs-PEOs **(Table.1)** The core paper & Elective course of 31 x 12 mapping matrix of Cs-POs **(Table. 2)** is prepared at the institute level in this regard for all courses in the program. Radar graph was plotted to find out the level of correlation between PEO-Cs **(Fig.1)** and PO-Cs **(Fig.2**).

Table 1. CO-PEO Mapping matrix

S.NO	COURSE	PEO1	PEO2	PEO3	PEO4	PEO5
1.	Anatomy(AN)	3	2	1	3	3
2.	Physiology(PHY)	2	3	2	3	3
3.	Biochemistry(BIO)	3	2	3	3	3
4.	Pathology(PAT)	3	3	3	3	3
5.	Microbiology(MIC)	3	3	3	3	3
6.	English (ENG)	3	3	2	3	2
7.	Culinary Skills for optimal nutrition(NUTRI)	3	2	2	2	3
8.	Enhancing soft skill & personality(ESSP)	2	2	1	3	2
9.	Basics of Yoga & Practice	3	2	2	3	3
10.	Speaking effectively	3	3	2	3	2
11.	Basics of Hospital Administration(HOSP)	3	2	2	2	3
12.	Counseling and Guidance(COUNS)	2	2	1	3	2
13.	Lifestyle Disorders (LD)	3	2	2	3	3
14.	Blood Banking and Blood components (BB)	3	3	2	3	3
15.	Hematology, Clinical Pathology (HEMAT)	3	3	3	3	2
16.	General Bacteriology, Immunology, Systematic Bacteriology, Mycology(BACT)	3	3	2	3	3

17.	Environmental studies	2	3	2	3	3
18.	Good Clinical Laboratory practice	3	3	3	2	3
19.	Computer Applications	3	2	1	3	2
20.	Library and E-resource	3	2	2	3	2
21.	Public Health and Hygiene	2	2	3	2	3
22.	Basic Psychology	3	2	2	3	3
23.	Sociology	2	3	3	3	2
24.	Entrepreneurship essentials	3	2	2	3	3
25.	Virology, Parasitology, Serology, Applied Microbiology, Entomology(VIR-PARA-SERO)	3	3	3	3	3
26.	Histopathology& Cytology(HISTO)	3	3	3	3	3
27.	Clinical Biochemistry(BIOC)	3	3	3	3	3
28.	Biomedical Waste Management	3	3	2	3	3
29.	Cell culture Technologies	3	2	3	2	2
30.	Biochemistry & Molecular Biology	3	3	2	3	3
31.	Pharmacology	3	2	2	3	3
Average		**2.6**	**2.48**	**2.16**	**2.77**	**2.74**

CO-PEO Mapping

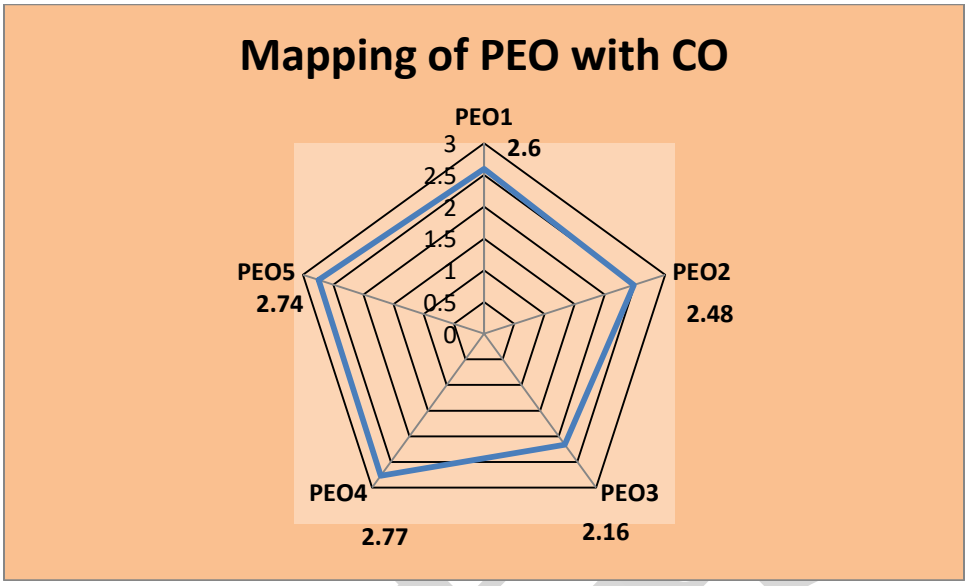

Figure 1. Mapping of Program educational objectives& course
(0 - no correlation; 1 - Low correlation; 2 - Medium correlation ; 3 - High correlation)

Table 2. Cs-PO Mapping matrix

S.NO	COURSE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	P012
1.	Anatomy(AN)	3	2	3	2	2	0	1	1	1	2	2	1
2.	Physiology(PHY)	3	3	3	3	2	0	3	2	2	1	2	2
3.	Biochemistry(BIO)	3	2	2	3	3	3	3	2	2	3	2	2
4.	Pathology(PAT)	3	3	2	3	3	3	2	3	2	3	2	2
5.	Microbiology(MIC)	3	3	2	3	3	3	2	3	2	3	2	2
6.	English(ENG)	2	2	1	1	0	1	0	0	2	1	2	2
7.	Culinary Skills for optimal nutrition(NUTRI)	2	2	1	0	0	3	0	1	2	0	1	1
8.	Enhancing soft skill & personality(ESSP)	2	2	2	2	1	0	2	1	2	2	2	3
9.	Basics of Yoga & Practice	3	2	1	1	0	1	0	0	2	1	2	2

10.	Speaking effectively	2	2	1	2	0	3	2	1	2	2	1	1
11.	Basics of Hospital Administration (HOSP)	3	2	2	2	1	0	2	1	2	2	2	3
12.	Counseling and Guidance(COUNS)	3	2	2	2	0	1	1	2	2	1	2	2
13.	Lifestyle Disorders (LD)	3	2	2	1	2	3	0	1	2	0	1	1
14.	Blood Banking and Blood components (BB)	2	2	2	2	1	0	2	1	2	2	2	3
15.	Hematology, Clinical Pathology (HEMAT)	3	3	2	3	3	3	3	3	1	3	2	3
16.	General Bacteriology, Immunology, Systematic Bacteriology, Mycology (BACT)	3	2	3	3	3	3	3	3	3	2	3	3
17.	Environmental studies	3	2	1	1	2	3	1	1	2	2	1	3
18.	Good Clinical Laboratory practice	2	2	3	2	1	1	2	1	3	2	2	3
19.	Computer Applications	3	3	2	2	3	3	3	3	1	3	2	3
20.	Library and E-resource	3	2	3	2	2	3	2	1	2	0	1	1
21.	Public Health and Hygiene	3	2	1	1	2	3	1	1	2	2	1	3
22.	Basic Psychology	2	2	3	2	1	1	2	1	3	2	2	3
23.	Sociology	3	2	2	2	3	3	3	3	1	3	2	3
24.	Entrepreneurship essentials	3	2	3	2	2	3	2	1	2	2	1	3
25.	Virology, Parasitology, Serology, Applied	3	2	1	2	2	3	1	2	3	2	2	3

	Microbiology, Entomology(VIR-PARA-SERO)												
26.	Histopathology& Cytology(HISTO)	3	2	3	2	2	3	2	3	3	2	3	3
27.	Clinical Biochemistry(BIOC)	3	3	2	2	3	3	3	3	2	3	2	3
28.	Biomedical Waste Management	3	2	1	2	2	3	2	1	2	0	1	1
29.	Cell culture Technologies	3	2	1	2	2	3	1	2	2	2	1	3
30.	Biochemistry & Molecular Biology	3	2	3	2	1	2	2	1	3	2	2	3
31.	Pharmacology	3	2	2	2	3	2	3	3	1	3	2	3
AVERAGE SCORE		**2.77**	**2.19**	**2.16**	**1.96**	**1.83**	**2.12**	**1.8**	**1.83**	**2.03**	**1.87**	**2.16**	**2.38**

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation ;3 - High correlation).

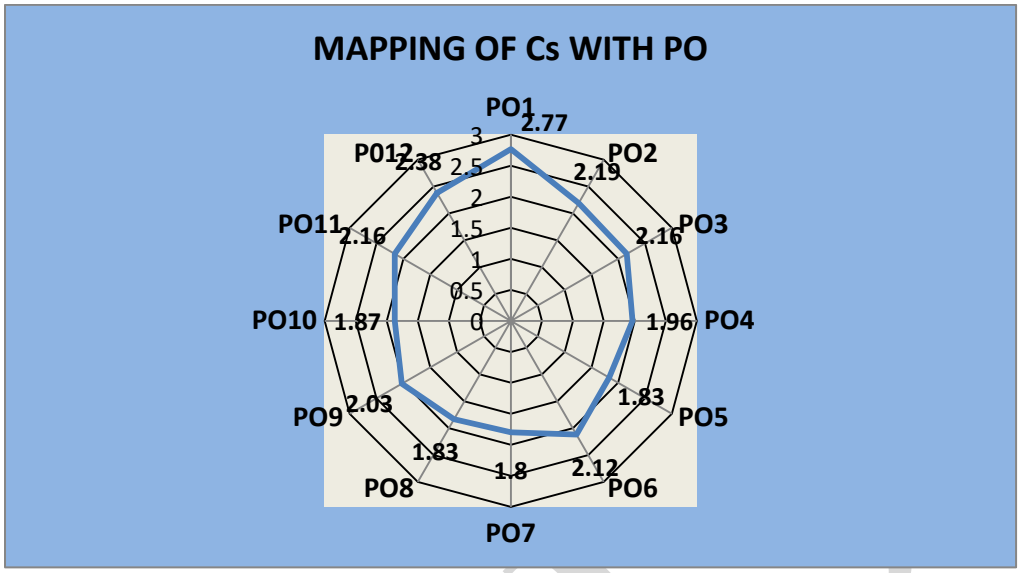

Figure 2. Mapping of Program outcome &course

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation)

Analysis of Cs, POs and PEOs:

On analyzing, the average score of individual program outcome ranges from 1.83 to 2.77. It shows, there exist a strong correlation of all Cs with that of PO1 & PO12, whereas mediumcorrelation between Cs and PO2, PO3 & PO11. Similarly, on analyzing, the average score of individual program educational objectives ranges from 2.16 to 2.77. It shows, there exist a strong correlation of all Cs with that of PEO4 & PEO5, whereas medium correlation between Cs and PEO1, PEO2 & PEO3.

UNDER GRADUATE
3. B.Sc. Optometry

Program Educational Objectives (PEO)

Program educational objectives for under graduate program are as follows:

- A technical expert who genuinely gets involved in patient care and does multi-task responsibilities.
- Communicators possessing adequate communication skills to convey the required information in an appropriate manner in various health care settings.
- Demonstrate basic administration/management and leadership skills.
- Lifelong learner is keen on updating oneself regarding the technical advancement in the health care field and able to perform the role of a good technologist and /or, researcher and teacher.
- Optometrist who understands and follows the principle of bio-ethics / ethics related to the health care system.

Program outcome (PO)

At the end of the 3 year of training under graduates of Optometry Should be able to

OPT -PO1: Performs the duty as a blood bank Technologist, with leadership qualities having a good written & communication skills and also skilled at computer applications including E-Library.

OPT -PO2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases.

OPT PO 3: Understanding the structure and functions of different organs in normal human body

OPT PO 4: To learn the general Biochemistry, Microbiology and Pathology, gaining expertise in Clinical Laboratory practices.

OPT PO 5: Be able to correct refractive errors and provide spectacle prescription

OPT PO 6: Be able to fit, evaluate, prescribe and dispense contact lenses for refractive errors and other ocular conditions

OPT PO 7: Be able to assess the low vision and provide comprehensive low vision care

OPT PO 8: Be able to have adequate knowledge to develop skill in manufacturing of spectacles, contact lenses and low vision devices.

OPT PO 9: Be able to do complete binocular vision assessment, manage non-strabismic Binocular vision anomalies and refer condition which warrants surgery

OPT PO 10: Be able to assess the visual demands for various occupations and match it to the visual capabilities. Also be able to advice on eye safety wear for various occupations.

OPT PO 11: Have knowledge and skill for early detection of various ocular conditions such as glaucoma and its pharmacological treatment.

OPT PO 12: Have knowledge regarding organizations of eye banks and preservation of ocular tissues.

OPT PO 13: Have knowledge on sensory substitution and other rehabilitation measures for totally visually challenged. To identify various life style disorders and with due counselling& guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy.

Course (Cs)

B.Sc. Optometry (OPT) program under the CHOICE BASED CREDIT SYSTEM consists of following core courses namely: 1st Year B.Sc OPT consists of Anatomy, Physiology, Biochemistry,

Pathology, and Microbiology ; 2nd Year B.Sc OPT consists of, Computer Application, Environmental Sciences, Physical and geometrical optics, Ocular Diseases, Optometric Optics & Visual optics and Instrumentation; 3rd Year B.Sc OPT consist of BSV and contact lens, Glaucoma, Dispensing Optics and Low vision Aids & Pediatric, Geriatric, Law and Occupational Optometry; 4th Year – One year Internship.

Also as **per the UGC guidelines, during the study period an Allied Health Science Student will be studying Two Ability Enhancement compulsory courses, four Skill enhancement courses, two Generic Elective Courses and two Discipline Elective Courses.** Thus the B.Sc Optometry (OPT) program consists of following Electives courses, namely **Ability Enhancement compulsory course (AECC) consisting** of English and Environmental studies, **Skill enhancement courses namely** Culinary Skills for optimal nutrition, Enhancing soft skill & personality, Basics of Yoga & Practice, Speaking effectively, Good Clinical Laboratory practice, Computer Applications, Library and E-resource and Public Health and Hygiene, **Generic Elective Course** namely Basics of Hospital Administration, Counseling and Guidance, Lifestyle Disorders, Basic Psychology, Sociology and Entrepreneurship essentials, **Discipline Elective Courses namely** Biomedical Waste Management, Eye banking ,Community Optometry, Ocular Pharmacology &Visual diagnostics. Each course has its well defined course outcome mentioned in individual course book.

Mapping and analysis of Cs, POs and PEOs

The

Non-regulatory, COs and POs are defined by SBV norms. Based on this, course outcomes are refined by the respective faculty members of the course using action verbs of learning levels as suggested by Bloom Taxonomy. Then, a correlation is established between Cs and POs and Cs and PEOs on the scale of 0 to 3 ('0'being no correlation, 1 being the low correlation, 2 being medium correlation and 3 being high correlation) based on their perception. The average score is calculated and is correlated with the courses as a whole not individually. The core paper & Elective course 34 x 5 mapping matrix of COs-PEOs **(Table.1)** The core paper & Elective course of 34 x 13 mapping matrix of Cs-POs **(Table. 1)** is prepared at the institute level in this regard for all courses in the program. Radar graph was plotted to find out the level of correlation between PEO-Cs **(Fig.1)** and PO-Cs **(Fig.2**).

Table 1. CO-PEO Mapping matrix

S.NO	COURSE	PEO1	PEO2	PEO3	PEO4	PEO5
1.	Anatomy(AN)	3	2	1	3	3
2.	Physiology(PHY)	2	3	2	3	3
3.	Biochemistry(BIO)	3	2	3	3	3
4.	Pathology(PAT)	3	3	3	3	3
5.	Microbiology(MIC)	3	3	3	3	3
6.	English(ENG)	2	3	2	2	2
7.	Culinary Skills for optimal nutrition (NUTRI)	3	2	1	3	3
8.	Enhancing soft skill & personality(ESSP)	3	2	1	2	3
9.	Basics of Yoga & Practice	3	1	2	2	3
10.	Speaking effectively	2	3	2	3	3

11.	Basics of Hospital Administration(HOSP)	3	2	2	3	2
12.	Counseling and Guidance(COUNS)	2	3	1	3	2
13.	Lifestyle Disorders (LD)	2	3	2	3	2
14.	Physical and geometrical optics	3	2	2	3	3
15.	Ocular Diseases	3	2	2	3	3
16.	Optometric Optics	3	2	2	3	3
17.	Visual optics and Instrumentation	3	1	2	3	3
18.	Environmental studies	2	3	2	3	3
19.	Good Clinical Laboratory practice	3	3	3	2	3
20.	Computer Applications	3	2	1	3	2
21.	Library and E-resource	3	2	2	3	2
22.	Public Health and Hygiene	2	2	3	2	3
23.	Basic Psychology	3	2	2	3	3
24.	Sociology	2	3	3	3	2
25.	Entrepreneurship essentials	3	2	2	3	3
26.	BSV and contact lens	3	1	1	2	3
27.	Glaucoma	3	1	2	2	3
28.	Dispensing Optics and Low vision Aids	3	2	2	3	3
29.	Pediatric, Geriatric, Law and Occupational Optometry	3	3	2	2	2
30.	Biomedical Waste Management	3	3	2	3	3
31.	Eye banking	3	2	3	1	3
32.	Community Optometry	3	2	2	2	3
33.	Ocular Pharmacology	3	2	2	3	3
34.	Visual diagnostics	2	2	3	2	3
AVERAGE SCORE		**2.74**	**2.24**	**2.06**	**2.65**	**2.76**

CO-PEO MAPPING

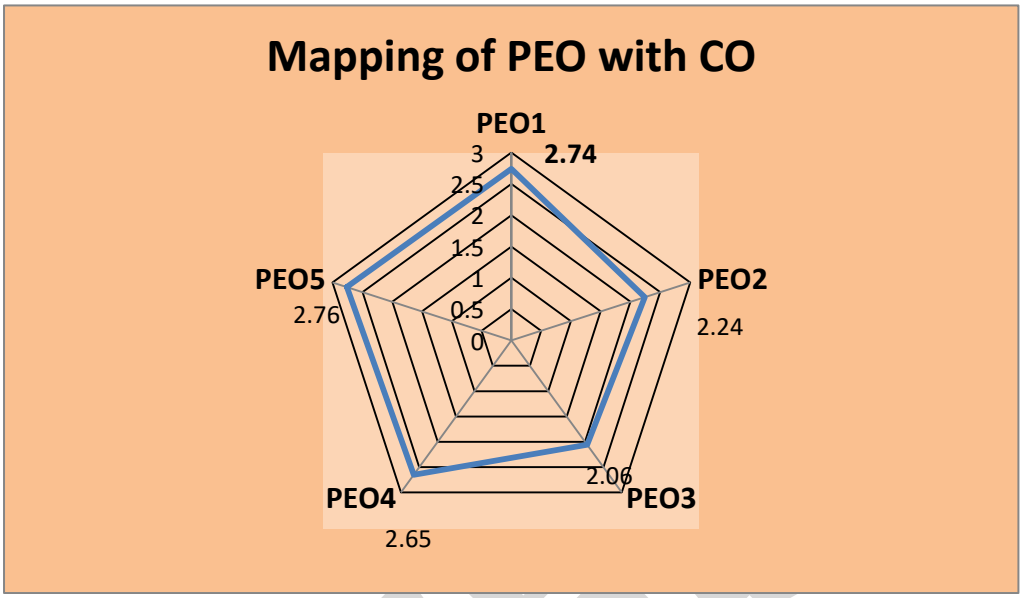

Figure 1. Mapping of Program educational objectives& course
(0 - no correlation; 1 - Low correlation; 2 - Medium correlation ; 3 - High correlation)

Table 2. Cs-PO Mapping matrix

S.NO	COURSE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	P012	P013
1.	Anatomy(AN)	3	2	3	2	2	0	1	1	1	2	2	1	3
2.	Physiology(PHY)	3	3	3	3	2	0	3	2	2	1	2	2	2
3.	Biochemistry(BIO)	3	2	2	3	3	3	3	2	2	3	2	2	3
4.	Pathology(PAT)	3	3	2	3	3	3	2	3	2	3	2	2	1
5.	Microbiology(MIC)	3	3	2	3	3	3	2	3	2	3	2	2	2
6.	English(ENG)	2	2	1	1	0	1	0	0	2	1	2	2	3
7.	Culinary Skills for optimal nutrition(NUTRI)	2	2	1	0	0	3	0	1	2	0	1	1	2
8.	Enhancing soft skill & personality(ESSP)	2	2	2	2	1	0	2	1	2	2	2	3	3
9.	Basics of Yoga & Practice	3	2	1	1	0	1	0	0	2	1	2	2	3
10.	Speaking effectively	2	2	1	2	0	3	2	1	2	2	1	1	2
11.	Basics of Hospital Administration (HOSP)	3	2	2	2	1	0	2	1	2	2	2	3	2
12.	Counseling and Guidance(COUNS)	3	2	2	2	0	1	1	2	2	1	2	2	3

13.	Lifestyle Disorders (LD)	3	2	2	1	2	3	0	1	2	0	1	1	2
14.	Physical and geometrical optics	2	2	2	2	1	0	2	1	2	2	2	3	3
15.	Ocualr Diseases	3	3	2	3	3	3	3	3	1	3	2	3	2
16.	Optometric Optics	3	2	3	3	3	3	3	3	3	2	3	3	3
17.	Visual optics													2
18.	Environmental studies	3	2	1	1	2	3	1	1	2	2	1	3	3
19.	Good Clinical Laboratory practice	2	2	3	2	1	1	2	1	3	2	2	3	2
20.	Computer Applications	3	3	2	2	3	3	3	3	1	3	2	3	3
21.	Library and E-resource	3	2	3	2	2	3	2	1	2	0	1	1	1
22.	Public Health and Hygiene	3	2	1	1	2	3	1	1	2	2	1	3	2
23.	Basic Psychology	2	2	3	2	1	1	2	1	3	2	2	3	1
24.	Sociology	3	2	2	2	3	3	3	3	1	3	2	3	23
25.	Entrepreneurship essentials	3	2	3	2	2	3	2	1	2	2	1	3	2
26.	BSV and contact lens	3	2	1	2	2	3	1	2	3	2	2	3	1
27.	Glaucoma	3	2	3	2	2	3	2	3	3	2	3	3	2
28.	Dispensing Optics and Low vision Aids	3	3	2	2	3	3	3	3	2	3	2	3	3
29.	Pediatric,Geriatric,Law and Occupational Optometry	3	2	1	2	2	3	2	1	2	0	1	1	1
30.	Biomedical Waste Management	3	2	1	2	2	3	1	2	2	2	1	3	2
31.	Eye Bank	3	2	3	2	1	2	2	1	3	2	2	3	2
32.	Visual Diagnostics	3	2	2	2	3	2	3	3	1	3	2	3	3
33.	Pharmacology	3	2	2	2	3	2	3	3	1	3	2	3	1
AVERAGE SCORE		**2.90**	**2.09**	**2.12**	**1.81**	**1.84**	**2.06**	**1.96**	**1.81**	**2.21**	**1.87**	**1.90**	**2.27**	**1.96**

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation ;3 - High correlation).

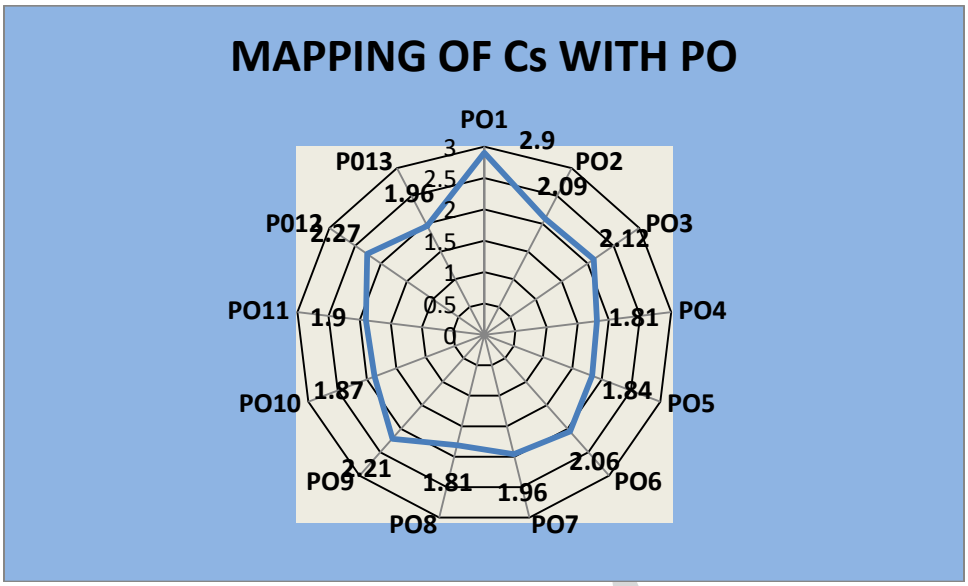

Figure 2. Mapping of Program outcome & course
(0 - No correlation; 1 - Low correlation; 2 - Medium correlation ;3 - High correlation)

Analysis of COs, POs and PEOs:

On analyzing, the average score of individual program outcome ranges from 1.81 to 2.90. It shows, there exist a strong correlation of all Cos with that of PO1 & PO12, whereas medium correlation between Cos and PO4 to PO 5. Similarly, on analyzing, the average score of individual program educational objectives ranges from 2.0 to 2.75. It shows, there exist a strong correlation of all Cs with that of PEO1 & PEO5, whereas medium correlation between Cs and PEO2, PEO3 & PEO 4.

UNDER GRADUATE

4.B.Sc Operation Theatre Technology

Program Educational Objectives (PEO)

Program educational objectives for under graduate program are as follows:

PEO 1: Effectiveness in patient safety and team dynamics in acute care settings.

PEO 2: For the development of hospital safety culture by providing dedicated professional, clinical and technical assistance for the clinicians.

PEO 3: Protects patients from physical danger and avoidable risk.

PEO 4: Role in infection control and prevention from pandemic diseases.

PEO 5: Effective communication and management in real time emergency crisis.

PROGRAMME OUTCOME:

At the end of 4 years of this training session, this curriculum will make students to achieve the following objectives:

OT T -PO1: Performs the duty as an Operation Theatre Technologist with leadership qualities having a good written & communication skill and also skilled at computer applications including E-library.

OT T -PO2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society and preventing the spread of infectious diseases.

OT T -PO3: Understanding the structure and functions of different organs in normal human body.

OT T -PO4: Ability to perform urinalysis, Serology, hematology, cytology, blood banking, biochemical, microbiological parameters and drug reactions.

OT T -PO5: To make students assist Anesthesiologist during administration and monitoring of Anesthesia including cardiopulmonary resuscitation.

OT T -PO6: To make students in effective participation of basic clinical skills, application of health promotion and disease prevention strategies.

OT T -PO7: To make students aware of the basic surgical and ethical principles, infection control protocol followed in operating room complex.

OT T -PO8: To make students participate in OT administration, organization and quality improvement.

OT T -PO9: To make students understand the pharmacological principles pertaining to the drugs used in anesthesia and critical care unit.

OT T -PO10: To build efficient technologist in handling Anesthesia monitors, Anesthesia & surgical Equipment's practice.

OT T -PO11: To make students effective in preparation of operation theatre for all super specialty surgeries & effective participation in labor analgesia, trauma care and management.

OT T -PO 12: To make students assist surgeons in all elective and emergency surgical procedures and providing basic general care and expertise in pulmonology radiological studies, interventional cardiology procedures.

OT T -PO 13: To identify various life style disorders and with due counseling& guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy.

Course (Cs)

B.Sc Operation theatre Technology (OTT) program under the CHOICE BASED CREDIT SYSTEM consists of following core courses namely: 1st Year B.Sc OTT consists of Anatomy, Physiology, Biochemistry, Pathology, and Microbiology ; 2nd Year B.Sc OTT consists of clinical microbiology & pathology ,clinical pharmacology , Introduction to OT technology , Medicine relevant to OT technology 3rd Year B.Sc.OTT consist of Operation theatre technology clinical , operation theatre technology applied ,operation theatre technology- advanced ; 4th Year – One year Internship. Also a**s per the UGC guidelines, during the study period an Allied Health Science Student will be studying Two Ability Enhancement compulsory courses, four Skill enhancement courses, two Generic Elective Courses and two Discipline Elective Courses.** Thus the B.Sc Operation theatre Technology Technology (OTT) program consists of following Electives courses, namely **Ability Enhancement compulsory course (AECC) consisting** of English and Environmental studies, **Skill enhancement courses namely** Culinary Skills for optimal nutrition, Enhancing soft skill & personality, Basics of Yoga & Practice, Speaking effectively, Good Clinical Laboratory practice, Computer Applications, Library and E-resource and Public Health and Hygiene, **Generic Elective Course** namely Basics of Hospital Administration, Counseling and Guidance, Lifestyle Disorders, Basic Psychology, Sociology and Entrepreneurship essentials, **Discipline Elective Courses namely** Pulmonary medicine , interventional cardiology , Labor analgesia , trauma evaluation and management .Each course has its well defined course outcome mentioned in individual course book.

Mapping and analysis of Cs, POs and PEOs

The process of attainment of Cs, POs and PEOs starts from writing appropriate COs for each course in the three year plus one year internship degree program. As Undergraduate Allied Health Science program is Non-regulatory, COs and POs are defined by SBV norms. Based on this, course outcomes are refined by the respective faculty members of the course using action verbs of learning levels as suggested by Bloom Taxonomy. Then, a correlation is established between Cs and POs and Cs and PEOs on the scale of 0 to 3 (‘0‘being no correlation, 1 being the low correlation, 2 being medium correlation and 3 being high correlation) based on their perception. The average score is calculated and is correlated with the courses as a whole not individually. The core paper & Elective course 32 x 5 mapping matrix of COs-PEOs **(Table.1)** The core paper & Elective course of 32 x 13 mapping matrix of Cs-POs **(Table. 2)** is prepared at the institute level in this regard for all courses in the program. Radar graph was plotted to find out the level of correlation between PEO-Cs **(Fig.1)** and PO-Cs **(Fig.2**).

Table 1. CO-PEO Mapping matrix

S.NO	COURSE	PEO1	PEO2	PEO3	PEO4	PEO5
1.	Anatomy(AN)	3	3	2	3	3
2.	Physiology(PHY)	3	3	2	3	3
3.	Biochemistry(BIO)	3	3	2	3	3
4.	Pathology(PAT)	3	2	3	3	3

5.	Microbiology(MIC)	3	2	3	3	3
6.	English(ENG)	3	2	2	3	3
7.	Culinary Skills for optimal nutrition(NUTRI)	3	2	1	3	3
8.	Enhancing soft skill & personality(ESSP)	3	2	1	3	3
9.	Basics of Yoga & Practice (YOGA)	2	2	2	2	2
10.	Speaking effectively (SPEAK)	3	2	2	3	3
11.	Basics of Hospital Administration(HOSP)	3	2	2	3	3
12.	Counseling and Guidance(COUNS)	3	2	1	3	3
13.	Lifestyle Disorders (LD)	3	2	2	3	3
14.	Clinical pharmacology (PHAR)	3	3	3	3	3
15.	Clinical microbiology & pathology (CPM)	3	3	3	3	3
16.	Introduction to ot technology (IOT)	3	3	3	3	3
17.	Medicine relevant to ot technology (MED OT)	3	3	3	3	3
18.	Environmental studies (EVS)	2	3	1	2	2
19.	Good Clinical Laboratory practice (LP)	2	3	1	2	2
20.	Computer Applications(COM)	2	2	1	2	2
21.	Library and E-resource (LIBR)	2	2	1	2	2
22.	Public Health and Hygiene (PHH)	2	2	3	2	2
23.	Basic Psychology (PSYCHO)	2	2	2	2	2
24.	Sociology(SOCIO)	2	2	2	2	2
25.	Entrepreneurship essentials (ENTEREP)	3	2	2	3	3
26.	Operation theatre technology – clinical (OT CL)	3	3	3	3	3
27.	Operation theatre technology –	3	3	3	3	3

	applied (OT APP)					
28.	Operation theatre technology – advanced (OT ADV)	3	3	3	3	3
29.	Labour analgesia (LAB AL)	3	2	3	3	3
30.	Interventional cardiology (CARD)	3	3	3	3	3
31.	Pulmonary medicine (PUL)	3	3	3	3	3
32.	Trauma evaluation & management (TRAU)	3	3	3	3	3
AVERAGE SCORE		**2.75**	**2.5**	**2.1**	**2.7**	**2.7**

CO-PEO Mapping

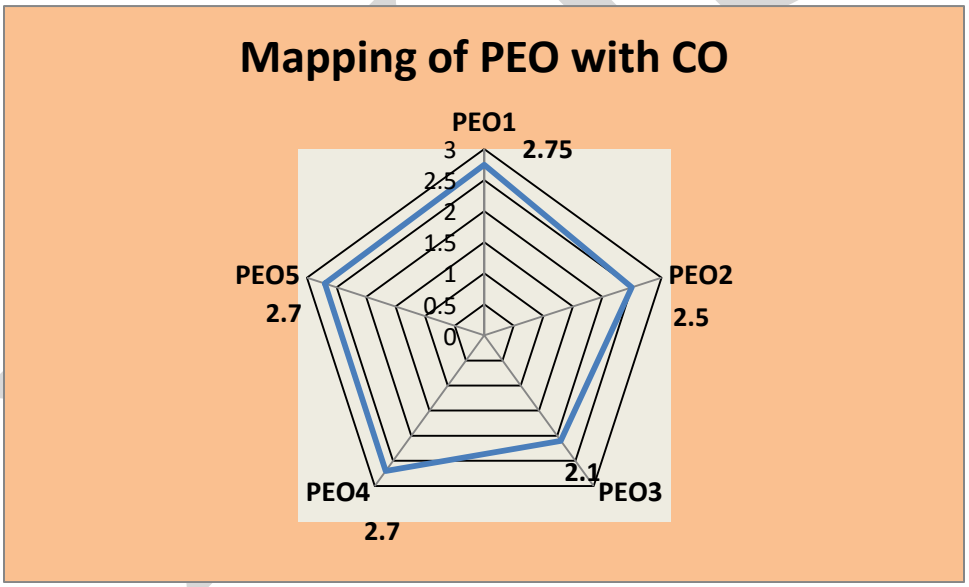

Figure 1. Mapping of Program educational objectives& course
(0 - no correlation; 1 - Low correlation; 2 - Medium correlation ; 3 - High correlation)

Table 2. Cs-PO Mapping matrix

S.NO	COURSE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO 13
1.	Anatomy(AN)	2	2	3	3	3	3	3	3	3	3	3	3	2
2.	Physiology (PHY)	2	2	3	3	3	3	3	3	3	3	3	3	3
3.	Biochemistry (BIO)	1	3	3	3	3	3	3	3	3	3	3	3	1

4.	Pathology(PAT)	1	2	3	3	3	3	3	3	3	3	3	3	3
5.	Microbiology (MIC)	1	3	2	2	3	2	2	2	3	2	3	3	2
6.	English(ENG)	3	2	2	2	3	2	2	2	3	2	3	2	1
7.	Culinary Skills for optimal nutrition (NUTRI)	3	2	2	2	2	2	2	2	2	2	2	2	1
8.	Enhancing soft skill & personality (ESSP)	3	2	1	1	3	1	3	3	3	2	3	3	2
9.	Basics of Yoga & Practice (YOGA)	3	2	1	1	3	1	2	2	3	2	3	3	2
10.	Speaking effectively (SPEAK)	3	2	2	2	3	2	3	3	3	2	3	3	2
11.	Basics of Hospital Administration (HOSP)	3	2	1	1	2	1	3	3	2	1	2	2	2
12.	Counseling and Guidance(COUNS)	3	2	1	1	2	1	3	3	2	2	2	2	2
13.	Lifestyle Disorders (LD)	3	2	1	1	2	1	1	1	2	1	2	2	3
14.	Clinical pharmacology (PHAR)	2	2	3	3	3	3	3	3	3	3	3	3	1
15.	Clinical microbiology & pathology (CPM)	2	2	3	3	3	3	3	3	3	3	3	3	1
16.	Introduction to ot technology (IOT)	2	2	2	2	3	2	3	3	3	3	3	3	1
17.	Medicine relevant to ottechnology (MED OT)	1	2	3	3	3	3	3	3	3	3	3	3	1
18.	Environmental studies (EVS)	1	2	3	3	2	3	3	3	2	2	2	2	2
19.	Good Clinical Laboratory practice (LP)	1	3	2	2	2	2	3	3	2	2	2	2	2
20.	Computer Applications(COM)	3	2	3	3	2	3	2	2	2	2	2	2	1
21.	Library and E-resource (LIBR)	3	2	1	1	2	1	2	2	2	1	2	2	1

22.	Public Health and Hygiene (PHH)	2	2	3	3	2	3	2	2	2	2	2	2	2
23.	Basic Psychology (PSYCHO)	3	2	2	2	2	2	2	2	2	2	2	2	2
24.	Sociology(SOCIO)	3	2	3	3	2	3	2	2	2	2	2	2	1
25.	Entrepreneurship essentials (ENTEREP)	3	2	1	1	2	1	2	2	2	2	2	2	3
26.	Operation theatre technology – clinical (OT CL)	2	2	3	3	3	3	3	3	3	3	3	3	3
27.	Operation theatre technology – applied (OT APP)	2	2	3	3	3	3	3	3	3	3	3	3	2
28.	Operation theatre technology – advanced (OT ADV)	2	2	3	3	3	3	3	3	3	3	3	3	2
29.	Labor analgesia (LAB AL)	1	2	2	2	3	3	2	2	3	3	3	3	2
30.	Interventional cardiology (CARD)	1	2	2	2	3	3	2	2	3	3	3	3	2
31.	Pulmonary medicine (PUL)	1	2	2	2	2	3	2	2	2	3	2	2	3
32.	Trauma evaluation & management (TRAU)	1	2	2	2	3	3	2	2	3	3	3	3	1
AVERAGE SCORE		**2.03**	**2.09**	**2.2**	**2.2**	**2.5**	**2.3**	**2.5**	**2.5**	**2.5**	**2.3**	**2.5**	**2.5**	**2**

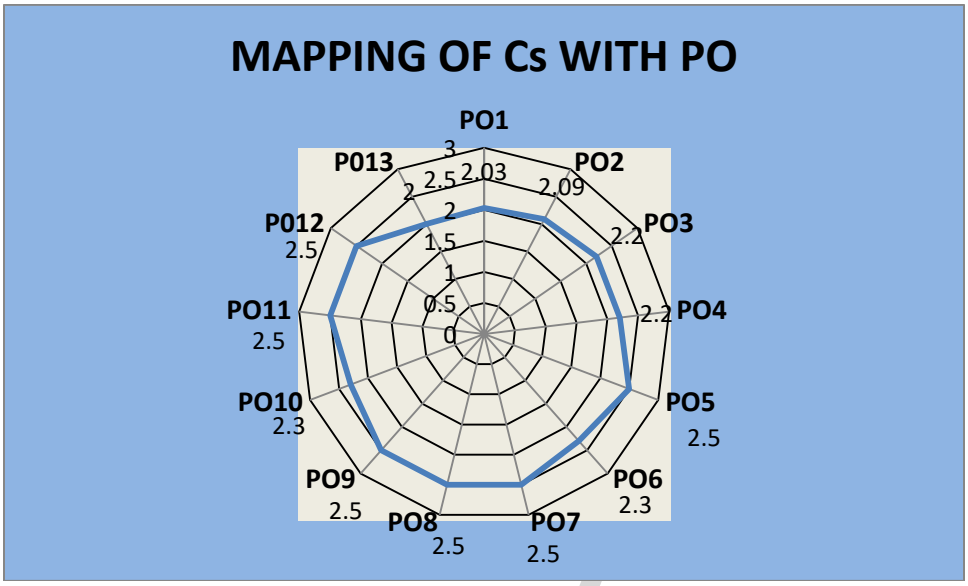

Figure 2. Mapping of Program outcome &course

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation)

Analysis of Cs, POs and PEOs:

On analyzing, the average score of individual program outcome ranges from 2.0 to 2.5. It shows, there exist a strong correlation of all Cs with that of PO5 ,PO7 , PO8 , PO9 , PO 11& PO12, whereas medium correlation between Cs and PO6, PO10 .Similarly, on analyzing, the average score of individual program educational objectives ranges from 2.0 to 2.5It shows, there exist a strong correlation of all Cs with that of PEO1, PEO4& PEO5, whereas medium correlation between Cs with that of PEO2 & PEO3.

UNDER GRADUATE

5. Cardiac Care Technology

Program Educational Objectives (PEO)

Program educational objectives for under graduate program are as follows:

- **PEO1:** A technical expert who genuinely gets involved in patient care and does multi-task responsibilities.
- **PEO 2**: Communicators possessing adequate communication skills to convey the required information in an appropriate manner in various health care settings.
- **PEO 3:** Demonstrate basic administration/management and leadership skills.
- **PEO 4:** Lifelong learner is keen on updating oneself regarding the technical advancement in the health care field and able to perform the role of a good technologist and /or, researcher and teacher.
- **PEO 5:** Technologist who understands and follows the principle of bio-ethics / ethics

related to the health care system.

Program Outcomes for CCT

CCT-PO1:Performs the duty as a Cardiac Technologist with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library.
CCT-PO2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society and preventing the spread of infectious diseases.
CCT-PO3: Understanding the structure and functions of different organs in normal human body.
CCT-PO4: To learn the general Biochemistry, Microbiology and Pathology, gaining expertise in Clinical Laboratory practices & Molecular Biochemistry.

CCT-PO5: Chart and Read ECGs. Recognize responding/reporting to emergency situations.

CCT-PO6:To Detect Silent Ischemia (Deficient Blood Flow To The Heart Without Symptoms Such as Angina) in Patients With Suspected Heart Disease But Normal Results on a Resting ECG.

CCT-PO7:The students should learn about basics of cardiac catheterization, Care of patient admitted in ICCU after a vascular intervention.

CCT-PO8: Understand the conceptual basis of drug action.

CCT-PO9: Understand basic transthoracic echocardiography views and to obtain hands-on training for performing TTE & TEE.

CCT-PO10: Understand the rationale for treating hypertension, and recommended BP goals

CCT-PO11: Apply the ASE Guidelines document for quantification of left and right ventricular size and function and Recognize the criteria for assessing diastolic dysfunction and measures to describe the severity of valvular heart disease, including prosthetic valve disease.

CCT-PO12: Guide the physicians in all interventional procedures. Recognize and manage all complications associated with cardiac catheterization. Explain the complementary use of other imaging modalities and learning the proper techniques to aid in life saving conditions.

CCT-PO13: To identify various life style disorders and with due counselling& guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behaviour healthy.

Course (Cs)

B.Sc Medical Laboratory Technology (MLT) program under the CHOICE BASED CREDIT SYSTEM consists of following core courses namely: 1st Year B.Sc MLT consists of Anatomy, Physiology, Biochemistry, Pathology, and Microbiology ; 2nd Year B.Sc MLT consists of, General Bacteriology, Immunology, Systematic Bacteriology, Mycology, Blood Banking & Blood components and Hematology & Clinical Pathology; 3rd Year B.Sc MLT consist of Virology, Parasitology, Serology, Applied Microbiology, Entomology, Histopathology & Cytology and Clinical Biochemistry; 4th Year – One year Internship. Also as **per the UGC guidelines, during the study period an Allied Health Science Student**

will be studying Two Ability Enhancement compulsory courses, four Skill enhancement courses, two Generic Elective Courses and two Discipline Elective Courses. Thus the B.Sc Medical Laboratory Technology (MLT) program consists of following Electives courses, namely **Ability Enhancement compulsory course (AECC) consisting** of English and Environmental studies, **Skill enhancement courses namely** Culinary Skills for optimal nutrition, Enhancing soft skill & personality, Basics of Yoga & Practice, Speaking effectively, Good Clinical Laboratory practice, Computer Applications, Library and E-resource and Public Health and Hygiene, **Generic Elective Course** namely Basics of Hospital Administration ,Counseling and Guidance, Lifestyle Disorders, Basic Psychology, Sociology and Entrepreneurship essentials, **Discipline Elective Courses namely** Biomedical Waste Management, Basic Radiation Biology, Palliative care and BLS &ACLS. Each course has its well defined course outcome mentioned in individual course book.

Mapping and analysis of Cs, POs and PEOs

The process of attainment of Cs, POs and PEOs starts from writing appropriate COs for each course in the three year plus one year internship degree program. As Undergraduate Allied Health Science program is Non-regulatory, COs and POs are defined by SBV norms. Based on this, course outcomes are refined by the respective faculty members of the course using action verbs of learning levels as suggested by Bloom Taxonomy. Then, a correlation is established between Cs and POs and Cs and PEOs on the scale of 0 to 3 (‘0‘being no correlation, 1 being the low correlation, 2 being medium correlation and 3 being high correlation) based on their perception. The average score is calculated and is correlated with the courses as a whole not individually. The core paper & Elective course 30 x 5 mapping matrix of COs-PEOs **(Table.1)** The core paper & Elective course of 30 x 12 mapping matrix of Cs-POs **(Table. 2)** is prepared at the institute level in this regard for all courses in the program. Radar graph was plotted to find out the level of correlation between PEO-Cs **(Fig.1)** and PO-Cs **(Fig.2)**.

Table 1. CO-PEO Mapping matrix

	COURSE	PEO1	PEO2	PEO3	PEO4	PEO5
1.	Anatomy(AN)	3	2	1	3	3
2.	Physiology(PHY)	2	3	2	3	3
3.	Biochemistry(BIO)	3	2	3	3	3
4.	Pathology(PAT)	3	3	3	3	3
5.	Microbiology(MIC)	3	3	3	3	3
6.	English(ENG)	2	3	1	2	2
7.	Culinary Skills for optimal nutrition(NUTRI)	3	2	2	2	3
8.	Enhancing soft skill &	2	2	1	3	2

	personality(ESSP)					
9.	Basics of Yoga & Practice	3	2	2	3	3
10	Speaking effectively	3	3	2	3	2
11	Basics of Hospital Administration(HOSP)	3	2	2	2	3
12	Counseling and Guidance(COUNS)	2	2	1	3	2
13	Lifestyle Disorders (LD)	3	2	2	3	3
14	Electrocardiography, Treadmill and Holter Monitoring (ETH)	3	3	2	3	3
15	Cardiac Catheterization basics and Cardiac drugs(CABD)	3	3	2	3	3
16	Echocardiography Part-I And Ambulatory Blood Pressure:(ECABP)	3	3	2	3	3
17	Environmental studies	2	3	1	3	3
18	Good Clinical Laboratory practice	3	3	3	2	3
19	Computer Applications	2	3	2	2	1
20	Library and E-resource	3	2	2	3	2
21	Public Health and Hygiene	2	2	3	2	3
22	Basic Psychology	3	2	2	3	3
23	Sociology	2	3	3	3	2
24	Entrepreneurship essentials	3	2	2	3	3
25	Echocardiography Advanced Part II: (ECA)	3	3	2	3	3
26	Cardiac Catheterization Advanced Part-II: (CCA)	3	3	2	3	3
27	Biomedical Waste Management	3	3	2	3	3
28	Basic Radiation Biology	3	2	3	2	2
29	Palliative care	3	3	2	3	3
30	BLS & ACLS	3	2	2	3	3
AVERAGE SCORE		**2.7**	**2.5**	**2.06**	**2.76**	**2.7**

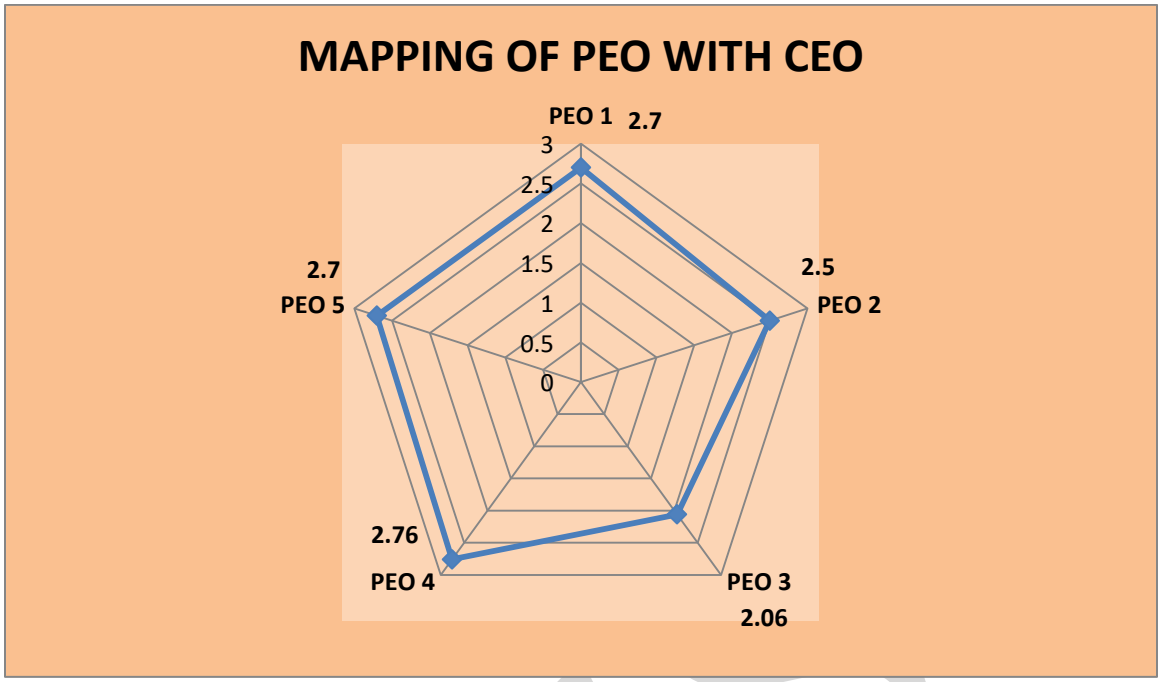

Figure 1. Mapping of Program educational objectives& course
(0 - no correlation; 1 - Low correlation; 2 - Medium correlation ; 3 - High correlation)

Table 2. Cs-PO Mapping matrix

S.NO	COURSE	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO8	PO9	PO10	PO 11	P012
1.	Anatomy(AN)	2	2	3	2	2	3	1	3	2	2	2	3
2.	Physiology(PHY)	1	2	3	3	2	2	2	3	2	2	3	2
3.	Biochemistry(BIO)	1	3	3	2	2	3	1	3	2	2	1	2
4.	Pathology(PAT)	1	2	2	3	2	3	2	2	3	3	3	2
5.	Microbiology(MIC)	1	3	1	3	2	2	3	3	1	3	1	2
6.	English(ENG)	3	2	2	2	2	1	1	2	2	2	2	3
7.	Culinary Skills for optimal nutrition(NUTRI)	2	2	1	2	2	3	0	2	2	2	1	1
8.	Enhancing soft skill & personality(ESSP)	2	2	2	2	1	2	2	2	2	2	2	3
9.	Basics of Yoga & Practice	3	2	1	1	1	1	0	0	2	1	2	2
10.	Speaking effectively	2	2	1	2	1	3	2	2	2	2	1	1
11.	Basics of Hospital Administration(HOSP)	3	2	2	2	2	2	2	2	2	2	2	3

12.	Counseling and Guidance(COUNS)	3	2	2	2	0	1	1	2	2	2	2	2
13.	Lifestyle Disorders (LD)	3	2	2	1	2	3	2	3	2	2	1	1
14.	Electrocardiography,Treadmill and Holter Monitoring (ETH)	3	1	3	2	3	3	2	3	2	3	2	0
15.	Cardiac Catheterization basics and Cardiac drugs(CABD)	3	1	2	2	2	2	3	3	2	3	3	3
16.	Echocardiography Part-I And Ambulatory Blood Pressure:(ECABP)	3	2	2	2	3	2	2	2	2	3	3	3
17.	Computer Science(COMP)	3	2	1	2	3	3	3	1	2	1	2	0
18.	Good Clinical Laboratory practice	2	2	3	2	1	1	2	1	3	2	2	3
19.	Environmental Sciences(EVS)	1	3	2	2	2	1	2	2	3	2	2	0
20.	Library and E-resource	3	2	3	2	3	3	2	2	3	3	1	1
21.	Public Health and Hygiene	3	2	1	2	2	3	3	2	2	3	1	3
22.	Basic Psychology	2	2	3	2	3	1	2	2	3	2	2	3
23.	Sociology	3	2	2	2	3	3	3	3	2	3	2	3
24.	Entrepreneurship essentials	3	2	3	2	3	3	2	2	2	3	1	3
25.	Echocardiography Advanced Part II: (ECA)	3	2	1	2	3	2	2	3	3	3	3	3
26.	Cardiac Catheterization Advanced Part-II: (CCA)	3	1	1	2	3	3	3	3	3	2	3	3
27.	Biomedical Waste Management	3	2	1	2	3	3	2	2	2	2	2	1
28.	Basic Radiation Biology	3	2	1	2	3	3	3	2	3	3	2	3
29.	Palliative care	3	2	3	2	1	2	3	3	3	3	2	3
30.	BLS & ACLS	3	2	2	2	3	2	3	3	3	3	2	3
AVERAGE SCORE		**2.46**	**2.0**	**2.0**	**2.1**	**2.16**	**2.3**	**2.03**	**2.26**	**2.3**	**2.36**	**2.0**	**2.16**

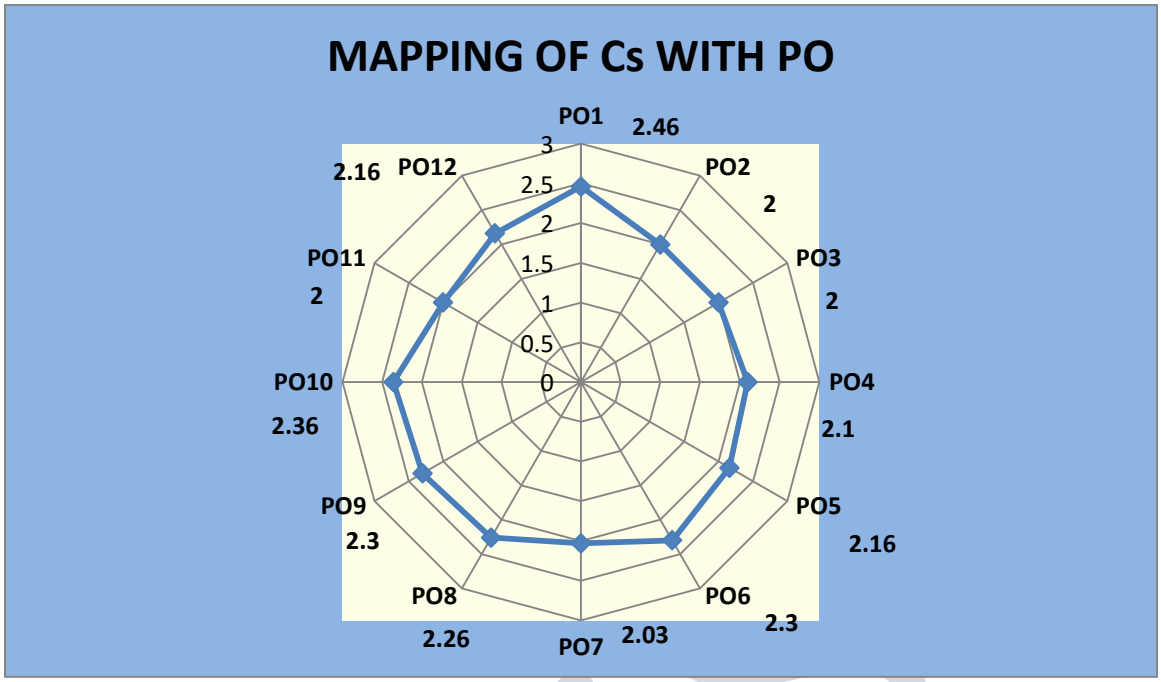

Figure 2. Mapping of Program outcome &course

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation)

Analysis of Cs, POs and PEOs:

On analyzing, the average score of individual program outcome ranges from 2.0 to 2.46. It shows, there exist a strong correlation of all Cs with that of PO1 & PO10, whereas medium correlation between Cs and PO2, PO3 & PO11. Similarly, on analyzing, the average score of individual program educational objectives ranges from 2.0 to 2.76. It shows, there exist a strong correlation of all Cs with that of PEO1, PEO4& PEO5, whereas medium correlation between Cs with that of PEO2 & PEO3.

UNDER GRADUATE

6. B.Sc Anaesthesia Technology

Program Educational Objectives (PEO)

Program educational objectives for under graduate program are as follows:

PEO 1 : Effectiveness in patient safety and team dynamics in acute care settings.

PEO 2: For the development of hospital safety culture by providing dedicated professional, clinical and technical assistance for the clinicians.

PEO 3 : Protects patients from physical danger and avoidable risk.

PEO 4: Role in infection control and prevention from pandemic diseases.

PEO 5 : Effective communication and management in real time emergency crisis.

PROGRAMME OUTCOME: At the end of 4 years of this training session, this curriculum will make students to achieve the following objectives:

ANEST-PO1: Performs the duty as an Anesthesia Technologist with leadership qualities having a good written & communication skill and also skilled at computer applications including E- library.

ANEST-PO2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society and preventing the spread of infectious diseases.

ANEST-PO3: Understanding the structure and functions of different organs in normal human body.

ANEST-PO4: Ability to perform urinalysis, Serology, hematology, cytology, blood banking, biochemical, microbiological parameters and drug reactions.

ANEST-PO5: To make students assist anesthesiologist during administration and monitoring of anesthesia including cardiopulmonary resuscitation.

ANEST-PO6: To make students apply anatomy and physiology knowledge gained through this curriculum in their Anesthesia technology practice.

ANEST-PO7: To make students aware of the ethical principles, infection control protocol followed in operating room complex.

ANEST-PO8: Tomake students participate in OT administration, organization and quality improvement.

ANEST-PO9: To make students understand the pharmacological principles pertaining to the drugs used in anesthesia and critical care unit.

ANEST-PO10: To build efficient technologist in handling Anesthesia monitors Equipment's practice.

ANEST-PO11: To make students effective in preparation of operation theatre for all super specialty surgeries & effective participation in labor analgesia, trauma care and management.

ANEST-PO 12:To make students assist in ICU emergency procedures and providing basic general care and expertise in pulmonology radiological studies, interventional cardiology procedures.

ANEST-PO 13: To identify various life style disorders and with due counseling& guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy.

Course (Cs)

B.Sc Anesthesia Technology (AT) program under the CHOICE BASED CREDIT SYSTEM consists of following core courses namely: 1st Year B.Sc AT consists of Anatomy, Physiology, Biochemistry, Pathology, and Microbiology ; 2nd Year B.Sc AT consists of, clinical pharmacology Applied anatomy & physiology , principles of OT management , Introduction to anesthesia technology , 3rd Year B.Sc AT consist of Clinical anesthesia part 1 , clinical anesthesia part 2 , Resuscitation ,critical care and recent advances , 4th Year – One year Internship. Also a**s per the UGC guidelines, during the study period an Allied Health Science Student will be studying Two Ability Enhancement compulsory courses, four Skill enhancement courses, two Generic Elective Courses and two Discipline Elective Courses.** Thus the B.Sc Anesthesia Technology (AT) program consists of following Electives courses, namely **Ability Enhancement compulsory course (AECC) consisting** of English and Environmental studies, **Skill enhancement courses namely** Culinary Skills for optimal nutrition, Enhancing soft skill & personality, Basics of Yoga & Practice, Speaking effectively, Good Clinical Laboratory practice, Computer Applications, Library and E-resource and Public Health and Hygiene, **Generic Elective Course** namely Basics of Hospital Administration, Counseling and Guidance, Lifestyle Disorders, Basic Psychology, Sociology and Entrepreneurship essentials, **Discipline Elective Courses namely** Pulmonary medicine , interventional cardiology , Labour analgesia , trauma evaluation and management .Each course has its well defined course outcome mentioned in individual course book.

Mapping and analysis of Cs, POs and PEOs

The process of attainment of Cs, POs and PEOs starts from writing appropriate COs for each course in the three year plus one year internship degree program. As Undergraduate Allied Health Science program is Non-regulatory, COs and POs are defined by SBV norms. Based on this, course outcomes are refined by the respective faculty members of the course using action verbs of learning levels as suggested by Bloom Taxonomy. Then, a correlation is established between Cs and POs and Cs and PEOs on the scale of 0 to 3 (‘0‘being no correlation, 1 being the low correlation, 2 being medium correlation and 3 being high correlation) based on their perception. The average score is calculated and is correlated with the courses as a whole not individually. The core paper & Elective course 32 x 5 mapping matrix of COs-PEOs **(Table.1)** The core paper & Elective course of 32 x 13 mapping matrix of Cs-POs **(Table. 2)** is prepared at the institute level in this regard for all courses in the program. Radar graph was plotted to find out the level of correlation between PEO-Cs **(Fig.1)** and PO-Cs **(Fig.2**).

Table 1. CO-PEO Mapping matrix

	COURSE	PEO1	PEO2	PEO3	PEO4	PEO5
1.	Anatomy(AN)	3	3	2	3	3
2.	Physiology(PHY)	3	3	2	3	3
3.	Biochemistry(BIO)	3	3	2	3	3

4.	Pathology(PAT)	3	2	3	3	3
5.	Microbiology(MIC)	3	2	3	3	3
6.	English(ENG)	3	2	2	3	3
7.	Culinary Skills for optimal nutrition(NUTRI)	3	2	1	3	3
8.	Enhancing soft skill & personality(ESSP)	3	2	1	3	3
9.	Basics of Yoga & Practice (YOGA)	2	2	2	2	2
10.	Speaking effectively (SPEAK)	3	2	2	3	3
11.	Basics of Hospital Administration(HOSP)	3	2	2	3	3
12.	Counseling and Guidance(COUNS)	3	2	1	3	3
13.	Lifestyle Disorders (LD)	3	2	2	3	3
14.	Clinical pharmacology (PHAR)	3	3	3	3	3
15.	Applied anatomy & physiology (ANT &PHY)	3	3	3	3	3
16.	Principles of OT management (OT)	3	3	3	3	3
17.	Introduction to Anesthesia technology (ANAES)	3	3	3	3	3
18.	Environmental studies (EVS)	2	3	1	2	2
19.	Good Clinical Laboratory practice (LP)	2	3	1	2	2
20.	Computer Applications(COM)	2	2	1	2	2
21.	Library and E-resource (LIBR)	2	2	1	2	2
22.	Public Health and Hygiene (PHH)	2	2	3	2	2
23.	Basic Psychology (PSYCHO)	2	2	2	2	2
24.	Sociology(SOCIO)	2	2	2	2	2
25.	Entrepreneurship essentials (ENTEREP)	3	2	2	3	3

26.	Clinical anesthesia part -1 (CL ANAES 1)	3	3	3	3	3
27.	Clinical anesthesia part -2 (CL ANAES 2)	3	3	3	3	3
28.	Resuscitation , critical care & recent advances (ICU)	3	3	3	3	3
29.	Labour analgesia (LAB AL)	3	2	3	3	3
30.	Interventional cardiology (CARD)	3	3	3	3	3
31.	Pulmonary medicine (PUL)	3	3	3	3	3
32.	Trauma evaluation & management (TRAU)	3	3	3	3	3
AVERAGE SCORE		**2.75**	**2.5**	**2.1**	**2.7**	**2.7**

CO-PEO Mapping

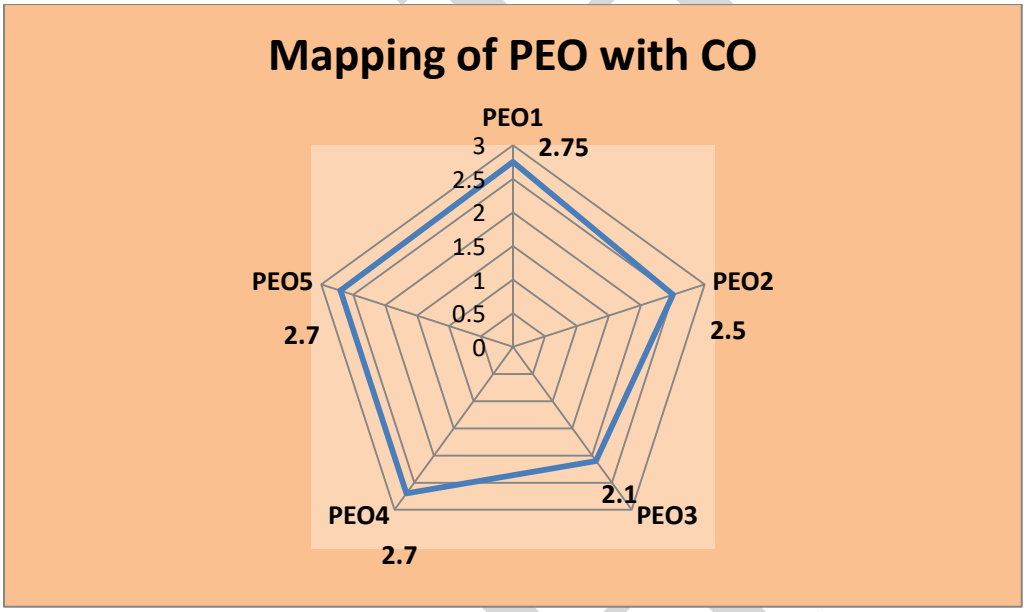

Figure 1. Mapping of Program educational objectives& course
(0 - no correlation; 1 - Low correlation; 2 - Medium correlation ; 3 - High correlation)

Table 2. Cs-PO Mapping matrix

S.NO	COURSE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13
1.	Anatomy(AN)	1	2	3	3	3	3	3	3	3	3	3	3	2
2.	Physiology(PHY)	1	2	3	3	3	3	3	3	3	3	3	3	3
3.	Biochemistry(BIO)	1	3	3	3	3	3	3	3	3	3	3	3	1
4.	Pathology(PAT)	1	2	3	3	3	3	3	3	3	3	3	3	3
5.	Microbiology(MIC)	1	3	2	2	3	2	2	2	3	2	3	3	2
6.	English(ENG)	3	2	2	2	3	2	2	2	3	2	3	3	2
7.	Culinary Skills for optimal nutrition(NUTRI)	3	2	2	2	2	2	2	2	2	2	2	2	1
8.	Enhancing soft skill & personality(ESSP)	3	2	1	1	3	1	3	3	3	2	3	3	2
9.	Basics of Yoga & Practice (YOGA)	3	2	1	1	3	1	2	2	3	2	3	3	2
10.	Speaking effectively (SPEAK)	3	2	2	2	3	2	3	3	3	2	3	3	2
11.	Basics of Hospital Administration(HOSP)	3	2	1	1	2	1	3	3	2	1	2	2	2
12.	Counseling and Guidance(COUNS)	3	2	1	1	2	1	3	3	2	2	2	2	2
13.	Lifestyle Disorders (LD)	3	2	1	1	2	1	1	1	2	1	2	2	3
14.	Clinical pharmacology (PHAR)	2	2	3	3	3	3	3	3	3	3	3	3	1
15.	Applied anatomy & physiology (ANT &PHY)	2	2	3	3	3	3	3	3	3	3	3	3	1
16.	Principles of OT management (OT)	2	2	2	2	3	2	3	3	3	3	3	3	1

17.	Introduction to Anaesthesia technology (ANAES)	1	2	3	3	3	3	3	3	3	3	3	3	1
18.	Environmental studies (EVS)	1	2	3	3	2	3	3	3	2	2	2	2	2
19.	Good Clinical Laboratory practice (LP)	1	3	2	2	2	2	3	3	2	2	2	2	2
20.	Computer Applications(COM)	3	2	3	3	2	3	2	2	2	2	2	2	1
21.	Library and E-resource (LIBR)	3	2	1	1	2	1	2	2	2	1	2	2	1
22.	Public Health and Hygiene (PHH)	2	2	3	3	2	3	2	2	2	2	2	2	2
23.	Basic Psychology (PSYCHO)	3	2	2	2	2	2	2	2	2	2	2	2	2
24.	Sociology(SOCIO)	3	2	3	3	2	3	2	2	2	2	2	2	1
25.	Entrepreneurship essentials (ENTEREP)	3	2	1	1	2	1	2	2	2	2	2	2	3
26.	Clinical anesthesia part -1 (CL ANAES 1)	2	2	3	3	3	3	3	3	3	3	3	3	3
27.	Clinical anesthesia part -2 (CL ANAES 2)	2	2	3	3	3	3	3	3	3	3	3	3	2
28.	Resuscitation , critical care & recent advances (ICU)	2	2	3	3	3	3	3	3	3	3	3	3	2
29.	Labor analgesia (LAB AL)	1	2	3	3	3	3	2	2	3	3	3	3	2
30.	Interventional cardiology (CARD)	1	2	3	3	3	3	2	2	3	3	3	3	2
31.	Pulmonary medicine (PUL)	1	2	3	3	2	3	2	2	2	3	2	2	3
32.	Trauma evaluation & management (TRAU)	1	2	3	3	3	3	2	2	3	3	3	3	1
AVERAGE SCORE		**2**	**2**	**2.3**	**2.3**	**2.5**	**2.3**	**2.5**	**2.5**	**2.5**	**2.3**	**2.5**	**2.5**	**2**

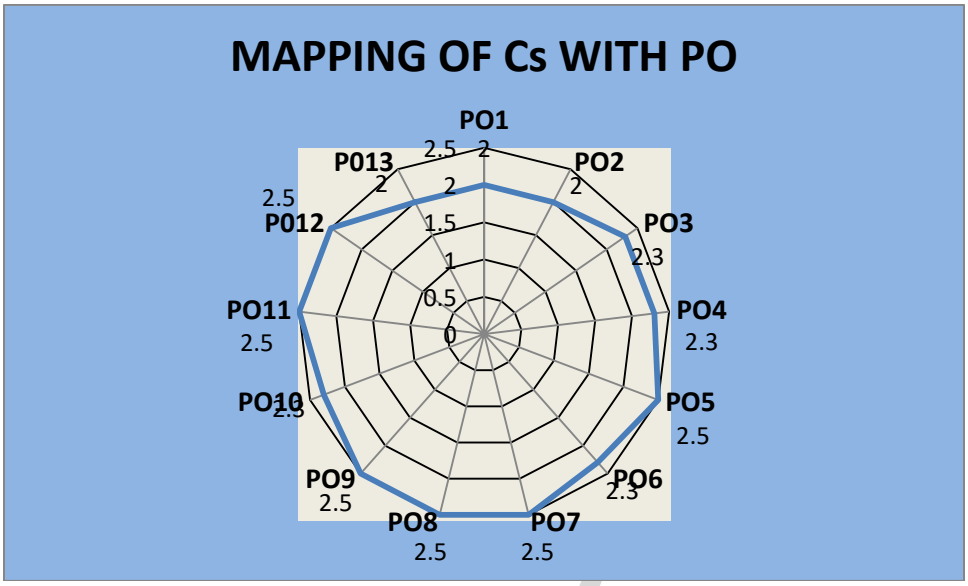

Figure 2. Mapping of Program outcome &course

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation)

Analysis of Cs, POs and PEOs:

On analyzing, the average score of individual program outcome ranges from 2.0 to 2.5. It shows, there exist a strong correlation of all Cs with that of PO5, PO7, PO8, PO9, PO 11 & PO 12, whereas medium correlation between Cs and PO1, PO2 & PO13. Similarly, on analyzing, the average score of individual program educational objectives ranges from 2.0 to 2.76. It shows, there exist a strong correlation of all Cs with that of PEO1, PEO4& PEO5, whereas medium correlation between Cs with that of PEO2 & PEO3.

UNDER GRADUATE

7.B.Sc. Physician Assistant

Program Educational Objectives (PEO)

Program educational objectives for under graduate program are as follows:

- **PEO1:** A technical expert who genuinely gets involved in patient care and does multi-task responsibilities.
- **PEO 2**: Communicators possessing adequate communication skills to convey the required information in an appropriate manner in various health care settings.
- **PEO 3:** Demonstrate basic administration/management and leadership skills.
- **PEO 4:** Lifelong learner is keen on updating oneself regarding the technical advancement in the health care field and able to perform the role of a good technologist and /or, researcher and teacher.

- **PEO 5:** Technologist who understands and follows the principle of bio-ethics / ethics related to the health care system.

Program outcome (PO)

At the end of the 4 year of training B.Sc. Physician Assistant students should be able to

PHY-PO 1: Performs the duty as a Physician assistant mastering computer application with good written and communication ability and also skilled at computer applications including E- library.

PHY-PO 2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases.

PHY-PO 3: Understanding the structure and functions of different organs in normal human body

PHY-PO 4: To learn the general Biochemistry, Microbiology and Pathology, gaining expertise in Clinical Laboratory practices.

PHY-PO 5: To make students assist anesthesiologist during administration and monitoring of anesthesia including cardiopulmonary resuscitation.

PHY-PO 6: To make students understand the pharmacological principles pertaining to the drugs used in clinical practice.

PHY-PO 7: To make students participate and coordinate emergency resuscitative measures in acute surgical situations including trauma.

PHY-PO 8: To make students participate in conduct labor and manage obstetrics and gynecological emergency situations.

PHY-PO 9: To make students efficiently in handling Pediatrics and Geriatrics related diseased conditions and treat accordingly.

PHY-PO 10: To make students in assisting super specialty surgeries like cardiothoracic vascular surgery, Neuro surgery, urology, Orthopedics and endoscopic procedures.

PHY-PO 11: To make students in providing primary care services including performing examinations, differential diagnosis and routine monitoring in various outpatient departments.

PHY-PO 12: To identify various life style disorders and with due counselling& guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy.

Course (Cs)

B.Sc. Physician Assistant (PA) program under the CHOICE BASED CREDIT SYSTEM consists of following core courses namely: 1stYear B.Sc. Physician Assistant consists of Anatomy, Physiology, Biochemistry, Pathology, and Microbiology; 2ndYear B.Sc. PA consists of, General Medicine,Clinical Pharmacology, Pediatrics, Surgery Equipment & Anesthesiology, Obstetrics & Gynecology; 3rdYear B.Sc. Physician Assistant consist of Cardiology & Cardiac Surgery, Neurology, Pulmonology, Nephrology, Orthopedics,

Gastroenterology ; 4th Year – One-year Internship.

Also as **per the UGC guidelines, during the study period an Allied Health Science Student will be studying Two Ability Enhancement compulsory courses, four Skill enhancement courses, two Generic Elective Courses and two Discipline Elective Courses.** Thus the B.Sc. Physician Assistant program consists of following Electives courses, namely **Ability Enhancement compulsory course (AECC) consisting** of English and Environmental studies, **Skill enhancement courses namely** Culinary Skills for optimal nutrition, Enhancing soft skill & personality, Basics of Yoga & Practice, Speaking effectively, Good Clinical Laboratory practice, Computer Applications, Library and E-resource and Public Health and Hygiene, **Generic Elective Course** namely Basics of Hospital Administration, Counseling and Guidance, Lifestyle Disorders, Basic Psychology, Sociology and Entrepreneurship essentials, **Discipline Elective Courses namely** Basic Assessment & Support in Intensive Care Unit , Basic Airway Management, Palliative care, Basic Respiratory Support& Transgender Healthcare. Each course has its well defined course outcome mentioned in individual course book.

Mapping and analysis of Cs, POs and PEOs

The process of attainment of Cs, POs and PEOs starts from writing appropriate COs for each course in the three year plus one year internship degree program. As Undergraduate Allied Health Science program is Non-regulatory, COs and POs are defined by SBV norms. Based on this, course outcomes are refined by the respective faculty members of the course using action verbs of learning levels as suggested by Bloom Taxonomy. Then, a correlation is established between Cs and POs and Cs and PEOs on the scale of 0 to 3 (‘0‘being no correlation, 1 being the low correlation, 2 being medium correlation and 3 being high correlation) based on their perception. The average score is calculated and is correlated with the courses as a whole not individually. The core paper & Elective course 34 x 5 mapping matrix of COs-PEOs **(Table.1)** The core paper & Elective course of 34 x 12 mapping matrix of Cs-POs **(Table. 2)** is prepared at the institute level in this regard for all courses in the program. Radar graph was plotted to find out the level of correlation between PEO-Cs **(Fig.1)** and PO-Cs **(Fig.2**).

Table 1. CO-PEO Mapping matrix

S.NO	COURSE	PEO1	PEO2	PEO3	PEO4	PEO5
1.	Anatomy(AN)	3	2	1	3	3
2.	Physiology(PHY)	2	3	2	3	3
3.	Biochemistry(BIO)	3	2	3	3	3
4.	Pathology(PAT)	3	3	3	3	3
5.	Microbiology(MIC)	3	3	3	3	3
6.	English (ENG)	3	3	2	3	2
7.	Culinary Skills for optimal nutrition(NUTRI)	3	2	2	2	3
8.	Enhancing soft skill & personality(ESSP)	2	2	1	3	2
9.	Basics of Yoga & Practice	3	2	2	3	3
10.	Speaking effectively	3	3	2	3	2
11.	Basics of Hospital Administration(HOSP)	3	2	2	2	3

12.	Counseling and Guidance(COUNS)	2	2	1	3	2
13.	Lifestyle Disorders (LD)	3	2	2	3	3
14.	Medicine and Pharmacology	3	3	3	2	3
15.	Surgery, Equipmentsand Anesthesiology	2	2	3	3	3
16.	Pediatrics	3	3	3	2	1
17.	Obstetrics and Gynecology	3	3	3	3	2
18.	Environmental studies	2	3	2	3	3
19.	GoodClinical Laboratory practice	3	3	3	2	3
20.	Computer Applications	3	2	1	3	2
21.	Library and E-resource	3	2	2	3	2
22.	Public Health and Hygiene	2	2	3	2	3
23.	Basic Psychology	3	2	2	3	3
24.	Sociology	2	3	3	3	2
25.	Entrepreneurship essentials	3	2	2	3	3
26.	Cardiology and Cardiac Surgery	3	3	2	3	3
27.	Neurology	1	2	3	2	3
28.	Nephrology and Pulmonology	2	3	2	3	3
29.	Gastroenterology and Orthopedics	1	2	3	3	3
30.	Basic Assessment & Support in Intensive Care Unit	3	3	2	3	3
31.	Basic Airway Management	3	2	3	2	2
32.	Palliative care	3	3	2	3	3
33.	Basic Respiratory Support	3	2	2	3	3
34.	Transgender Healthcare					
Average		**2.63**	**2.45**	**2.27**	**2.75**	**2.66**

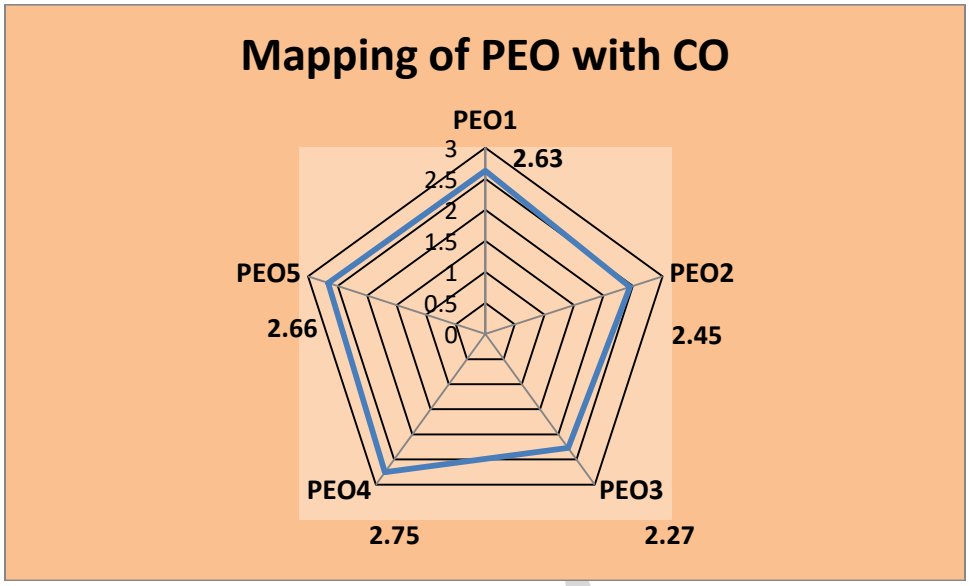

Figure 1. Mapping of Program educational objectives & course
(0 - no correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation)

Table 2. Cs-PO Mapping matrix

S.NO	COURSE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	P012
1.	Anatomy(AN)	3	2	3	2	2	0	1	1	1	2	2	1
2.	Physiology(PHY)	3	3	3	3	2	0	3	2	2	1	2	2
3.	Biochemistry(BIO)	3	2	2	3	3	3	3	2	2	3	2	2
4.	Pathology(PAT)	3	3	2	3	3	3	2	3	2	3	2	2
5.	Microbiology(MIC)	3	3	2	3	3	3	2	3	2	3	2	2
6.	English(ENG)	2	2	1	1	0	1	0	0	2	1	2	2
7.	Culinary Skills for optimal nutrition(NUTRI)	2	2	1	0	0	3	0	1	2	0	1	1
8.	Enhancing soft skill & personality(ESSP)	2	2	2	2	1	0	2	1	2	2	2	3
9.	Basics of Yoga & Practice	3	2	1	1	0	1	0	0	2	1	2	2
10.	Speaking effectively	2	2	1	2	0	3	2	1	2	2	1	1
11.	Basics of Hospital Administration(HOSP)	3	2	2	2	1	0	2	1	2	2	2	3
12.	Counseling and Guidance(COUNS)	3	2	2	2	0	1	1	2	2	1	2	2
13.	Lifestyle Disorders (LD)	3	2	2	1	2	3	0	1	2	0	1	1
14.	Medicine and Pharmacology	1	2	3	1	2	3	3	3	3	3	3	3

15.	Surgery, Equipmentsand Anesthesiology	2	3	3	1	3	2	3	3	2	3	3	1
16.	Pediatrics	2	1	3	3	0	3	1	2	3	3	3	3
17.	Obstetrics and Gynecology	2	3	3	3	3	3	3	3	2	0	3	2
18.	Environmental studies	3	2	1	1	2	3	1	1	2	2	1	3
19.	Good Clinical Laboratory practice	2	2	3	2	1	1	2	1	3	2	2	3
20.	Computer Applications	3	3	2	2	3	3	3	3	1	3	2	3
21.	Library and E-resource	3	2	3	2	2	3	2	1	2	0	1	1
22.	Public Health and Hygiene	3	2	1	1	2	3	1	1	2	2	1	3
23.	Basic Psychology	2	2	3	2	1	1	2	1	3	2	2	3
24.	Sociology	3	2	2	2	3	3	3	3	1	3	2	3
25.	Entrepreneurship essentials	3	2	3	2	2	3	2	1	2	2	1	3
26.	Cardiology and Cardiac Surgery	2	1	3	3	3	3	3	0	1	3	3	3
27.	Neurology	0	0	3	3	1	3	1	0	1	3	3	3
28.	Nephrology and Pulmonology	0	2	3	3	2	3	2	0	2	3	3	3
29.	Gastroenterology and Orthopedics	0	3	3	3	0	3	3	0	3	3	3	3
30.	Basic Assessment & Support in Intensive Care Unit	3	2	1	2	2	3	2	1	2	0	1	1
31.	Basic Airway Management		2	1	2	2	3	1	2	2	2	1	3
32.	Palliative care	3	2	3	2	1	2	2	1	3	2	2	3
33.	Basic Respiratory Support	3	2	2	2	3	2	3	3	1	3	2	3
34.	Transgender Healthcare	3	2	2	3	3	2	3	3	3	3	2	2
AVERAGE SCORE		**2.36**	**2.09**	**2.21**	**2.03**	**1.66**	**2.24**	**1.84**	**1.45**	**2.00**	**1.96**	**1.96**	**2.33**

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation ;3 - High correlation).

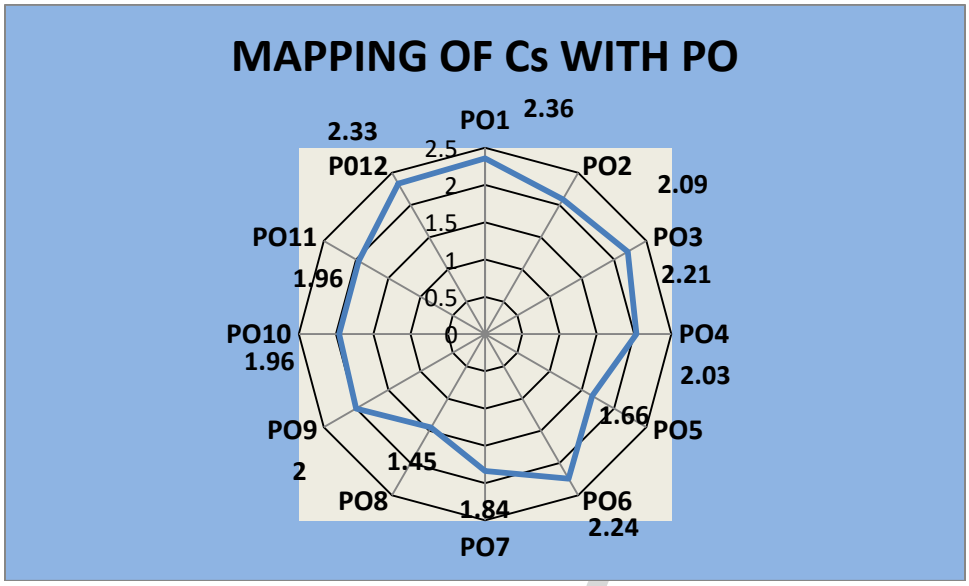

Figure 2. Mapping of Program outcome &course

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation)

Analysis of Cs, POs and PEOs:

On analyzing, the average score of individual program outcome ranges from 1.66 to 2.36. It shows, there exist a strong correlation of all Cs with that of PO1 & PO12, whereas medium correlation between Cs and PO2, PO3 & PO11. Similarly, on analyzing, the average score of individual program educational objectives ranges from 2.16 to 2.77. It shows, there exist a strong correlation of all Cs with that of PEO4 & PEO5, whereas medium correlation between Cs and PEO1, PEO2 & PEO 3.

UNDER GRADUATE

8. B.Sc Clinical Research

Program Educational Objectives (PEO)

Program educational objectives for under graduate program are as follows:

- **PEO1:** A technical expert who genuinely gets involved in patient care and does multi-task responsibilities.

- **PEO 2**: Communicators possessing adequate communication skills to convey the required information in an appropriate manner in various health care settings.

- **PEO 3:** Demonstrate basic administration/management and leadership skills.

- **PEO 4:** Lifelong learner is keen on updating oneself regarding the technical advancement in the health care field and able to perform the role of a good technologist and /or, researcher and teacher.

- **PEO 5:**Technologist who understands and follows the principle of bio-ethics / ethics related to the health care system.

Program outcome (PO)

- **CR-PO1:** Performs the duty as a Technologist, with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library
- **CR-PO2:** To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases
- **CR-PO3:** Understanding the structure and functions of different organs in normal human body.
- **CR-PO4:** To learn the general Biochemistry, Microbiology and Pathology, gaining expertise in Clinical Laboratory practices.
- **CR-PO5:** Develop knowledge about the basic concepts, skills and techniques required to work in the clinical research field.
- **CR-PO6:** Accumulate the knowledge and develop skills in the planning and management of clinical research including practices related to the organization, execution and monitoring of clinical trials.
- **CR-PO7:** Describe the established clinical trial regulations and guidelines, and ensure that the clinical trials are conducted ethically and in ways that respect the rights of clinical trial participants
- **CR-PO8:** Adequately trained to effectively prepare various essential documents of clinical trial and develop the skills in writing and critiquing research manuscripts
- **CR-PO9:** Apply the fundamental concepts of biostatistics in the field of clinical research
- **CR-PO10:** Develop the key skills and knowledge needed to operate an effective drug safety program.
- **CR-PO11:** To identify various life style disorders and with due counselling& guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy.

Course (Cs)

B.Sc Clinical Research (CR) program under the CHOICE BASED CREDIT SYSTEM consists of following core courses namely: 1stYear B.Sc CR consists of Anatomy, Physiology, Biochemistry, Pathology, and Microbiology ; 2ndYear B.Sc CR consists of, Basics Of Clinical Pharmacology & Clinical Research, Ethics In Clinical Research & Clinical Trial Documentation, Pharmacovigilance; 3rdYear B.Sc CR consist of Clinical Trials: Design And Regulations, Clinical Data Management & Biostatistics , Medical Writing; 4th Year – One year Internship.

Also a**s per the UGC guidelines, during the study period an Allied Health Science Student will be studying Two Ability Enhancement compulsory courses, four Skill enhancement courses, two Generic Elective Courses and two Discipline Elective Courses.** Thus the B.Sc Clinical Research (CR) program consists of following Electives courses, namely **Ability Enhancement compulsory course (AECC) consisting** of English and Environmental studies, **Skill enhancement courses namely** Culinary Skills for optimal nutrition, Enhancing soft skill & personality, Basics of Yoga & Practice, Speaking effectively, Good Clinical Laboratory practice, Computer Applications, Library and E-resource and Public Health and Hygiene, **Generic Elective Course** namely Basics of Hospital Administration, Counseling and Guidance, Lifestyle Disorders, Basic Psychology, Sociology and Entrepreneurship essentials. **Discipline Elective Courses namely** Biomedical Waste Management, Palliative care, Biochemistry & Molecular Biology and Air borne infection control. Each course has its well defined course outcome mentioned in individual course book.

Mapping and analysis of Cs, POs and PEOs

The process of attainment of Cs, POs and PEOs starts from writing appropriate COs for each course in the three year plus one year internship degree program. As Undergraduate Allied Health Science program is Non-regulatory, COs and POs are defined by SBV norms. Based on this, course outcomes are refined by the respective faculty members of the course using action verbs of learning levels as suggested by Bloom Taxonomy. Then, a correlation is established between Cs and POs and Cs and PEOs on the scale of 0 to 3 (‘0‘being no correlation, 1 being the low correlation, 2 being medium correlation and 3 being high correlation) based on their perception. The average score is calculated and is correlated with the courses as a whole not individually. The core paper & Elective course 34 x 5 mapping matrix of COs-PEOs **(Table.1)** The core paper & Elective course of 34 x 11 mapping matrix of Cs-POs **(Table. 2)** is prepared at the institute level in this regard for all courses in the program. Radar graph was plotted to find out the level of correlation between PEO-Cs **(Fig.1)** and PO-Cs **(Fig.2**).

Table 1. CO-PEO Mapping matrix

S.NO	COURSE	PEO1	PEO2	PEO3	PEO4	PEO5
1.	Anatomy(AN)	3	2	1	3	3
2.	Physiology(PHY)	2	3	2	3	3
3.	Biochemistry(BIO)	3	2	3	3	3
4.	Pathology(PAT)	3	3	3	3	3
5.	Microbiology(MIC)	3	3	3	3	3
6.	English (ENG)	3	3	2	3	2
7.	Culinary Skills for optimal nutrition(NUTRI)	3	2	2	2	3
8.	Enhancing soft skill & personality(ESSP)	2	2	1	3	2
9.	Basics of Yoga & Practice	3	2	2	3	3

10.	Speaking effectively	3	3	2	3	2
11.	Basics of Hospital Administration(HOSP)	3	2	2	2	3
12.	Counseling and Guidance(COUNS)	2	2	1	3	2
13.	Lifestyle Disorders (LD)	3	2	2	3	3
14.	Basics Of Clinical Pharmacology & Clinical Research (CP-CR)	3	3	2	3	3
15.	Ethics In Clinical Research & Clinical Trial Documentation (CR-CT)	3	3	3	3	2
16.	Pharmacovigilance (PHARM)	3	3	2	3	3
17.	Environmental studies	2	3	2	3	3
18.	Good Clinical Laboratory practice	3	3	3	2	3
19.	Computer Applications	3	2	1	3	2
20.	Library and E-resource	3	2	2	3	2
21.	Public Health and Hygiene	2	2	3	2	3
22.	Basic Psychology	3	2	2	3	3
23.	Sociology	2	3	3	3	2
24.	Entrepreneurship essentials	3	2	2	3	3
25.	Clinical Trials: Design And Regulations (CT-DR)	3	3	3	3	3
26.	Clinical Data Management& Biostatistics (CL-BIOS)	3	3	3	3	3
27.	Medical Writing (MED-WRI)	3	3	3	3	3
28.	Biomedical Waste Management	3	3	2	3	3
29.	Palliative care	3	2	3	2	2
30.	Biochemistry & Molecular Biology	3	3	2	3	3
31.	Air borne infection control	3	2	2	3	3
Average		**2.60**	**2.50**	**2.17**	**2.77**	**2.74**

CO-PEO Mapping matrix

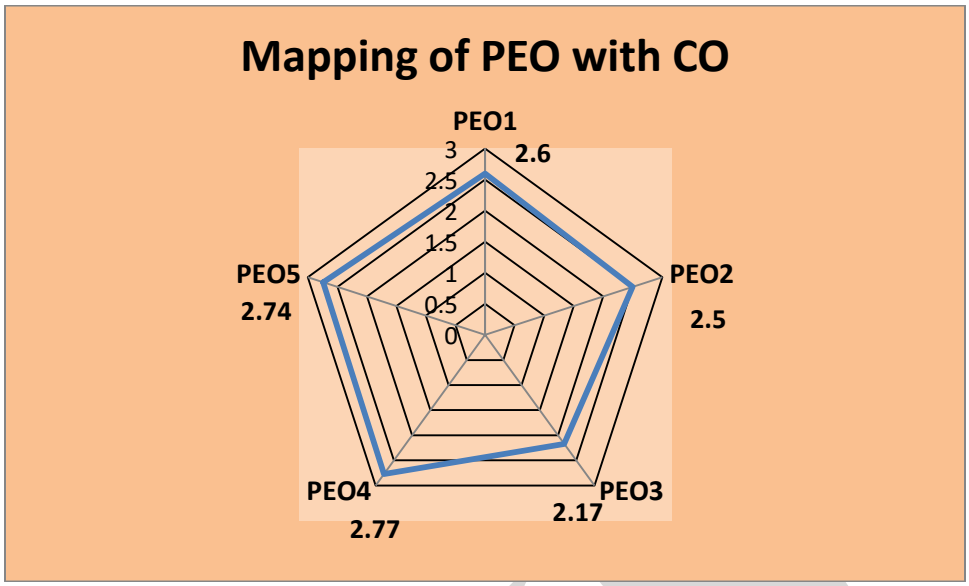

Figure 1. Mapping of Program educational objectives& course
(0 - no correlation; 1 - Low correlation; 2 - Medium correlation ; 3 - High correlation)

Table 2. Cs-PO Mapping matrix

S.NO	COURSE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	P012
1.	Anatomy(AN)	3	2	3	2	2	1	1	1	1	2	2	1
2.	Physiology(PHY)	3	3	3	3	2	0	3	2	2	1	2	2
3.	Biochemistry(BIO)	3	2	2	3	3	3	3	2	2	3	2	2
4.	Pathology(PAT)	3	3	2	3	3	3	2	3	2	3	2	2
5.	Microbiology(MIC)	3	3	2	3	3	3	2	3	2	3	2	2
6.	English(ENG)	2	2	1	1	0	1	0	0	2	1	2	2
7.	Culinary Skills for optimal nutrition(NUTRI)	2	2	1	0	0	3	0	1	2	1	1	1
8.	Enhancing soft skill & personality(ESSP)	3	2	3	2	1	0	2	2	2	2	3	3
9.	Basics of Yoga & Practice	3	2	1	1	0	1	2	1	2	1	2	3
10.	Speaking effectively	2	2	1	2	0	3	2	1	2	2	1	2
11.	Basics of Hospital Administration(HOSP)	3	2	2	3	1	2	2	3	2	2	2	3
12.	Counseling and Guidance(COUNS)	3	2	2	2	0	1	1	2	2	1	2	2
13.	Lifestyle Disorders (LD)	3	2	2	1	2	3	0	1	2	0	1	1
14.	Basics Of Clinical Pharmacology & Clinical Research (CP-CR)	3	2	2	1	3	1	2	3	2	3	2	3

15.	Ethics In Clinical Research & Clinical Trial Documentation (CR-CT)	3	3	2	3	3	3	3	3	1	3	2	3
16.	Pharmacovigilance (PHARM)	3	2	3	3	3	3	3	3	3	2	3	3
17.	Environmental studies	3	2	1	1	2	3	1	1	2	2	1	3
18.	Good Clinical Laboratory practice	2	2	3	2	1	1	2	1	3	2	2	3
19.	Computer Applications	3	3	2	2	3	3	3	3	1	3	2	3
20.	Library and E-resource	3	2	3	2	2	3	2	1	2	0	1	1
21.	Public Health and Hygiene	3	2	1	1	2	3	1	1	2	2	1	3
22.	Basic Psychology	2	2	3	2	1	1	2	1	3	2	2	3
23.	Sociology	3	2	2	2	3	3	3	3	1	3	2	3
24.	Entrepreneurship essentials	3	2	3	2	2	3	2	1	2	2	1	3
25.	Clinical Trials: Design And Regulations (CT-DR)	3	2	1	2	2	3	3	2	3	2	2	3
26.	Clinical Data Management& Biostatistics (CL-BIOS)	3	2	3	2	2	3	2	3	3	2	3	3
27.	Medical Writing (MED-WRI)	3	3	2	2	3	3	3	3	2	3	2	3
28.	Biomedical Waste Management	3	2	1	2	2	3	2	2	2	2	1	1
29.	Palliative care	2	2	1	2	2	3	1	2	2	2	1	3
30.	Biochemistry & Molecular Biology	3	2	3	2	3	3	2	2	3	2	2	3
31.	Air borne infection control	2	2	2	2	3	2	2	3	1	3	2	3
AVERAGE SCORE		**2.77**	**2.19**	**2.03**	**1.96**	**1.93**	**2.29**	**1.9**	**1.93**	**2.03**	**2**	**2**	**2.4**

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation ;3 - High correlation).

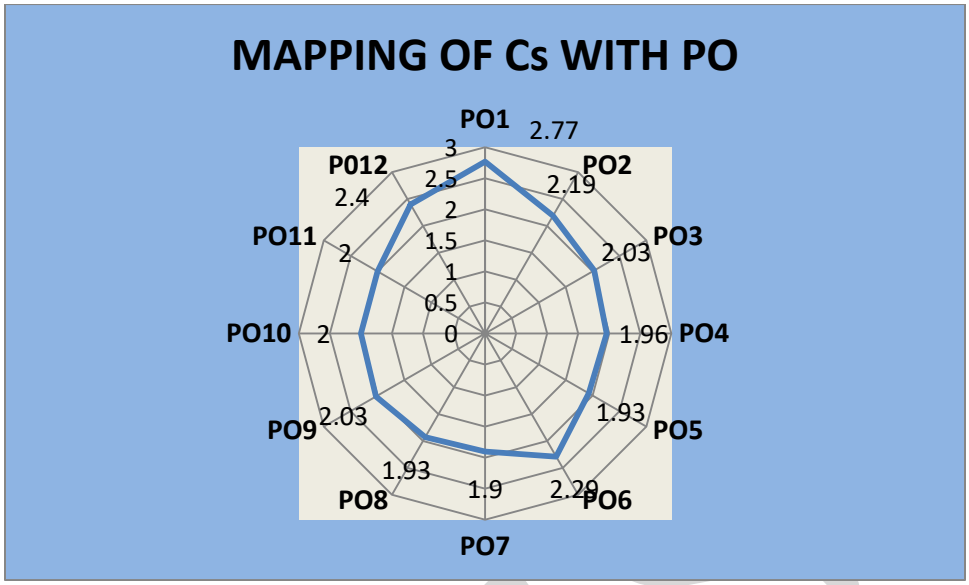

Figure 2. Mapping of Program outcome &course

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation)

Analysis of Cs, POs and PEOs:

On analyzing, the average score of individual program outcome ranges from 1.9 to 2.77. It shows, there exist a strong correlation of all Cs with that of PO1 & PO12, whereas mediumcorrelation between Cs and PO2 & PO6. Similarly, on analyzing, the average score of individual program educational objectives ranges from 2.50 to 2.77. It shows, there exist a strong correlation of all Cs with that of PEO4 & PEO5, whereas medium correlation between Cs and PEO1, PEO2 & PEO3.

UNDER GRADUATE

9. B.SC Clinical Nutrition

Program Educational Objectives (PEO)

Program educational objectives for under graduate program are as follows:

- **PEO1:** A technical expert who genuinely gets involved in patient care and does multi-task responsibilities.
- **PEO2:** Communicators possessing adequate communication skills to convey the required information in an appropriate manner in various health care settings.
- **PEO3:** Demonstrate basic administration/management and leadership skills.
- **PEO4:** Lifelong learner is keen on updating oneself regarding the technical advancement in the health care field and able to perform the role of a good technologist and /or, researcher and teacher.

- **PEO5:** Nutritionist/Dietitian who understands and follows the principle of bio-ethics / ethics related to the health care system.

Program outcome (PO)

At the end of the 3+1 Year internship of Clinical Nutrition Should be able to

PROGRAM OUTCOMES

CNPO1: Performs the duty as a Dietitian and Nutritionist with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library. English, Computer and E-Library, Entrepreneurship**.**

CNPO2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases. Environment studies & Hospital Safety Management, Biomedical waste management, hospital infection control.

CNPO3: Understanding the structure and functions of different organs in normal human body.

CNPO4: To learn the general Biochemistry, Microbiology and Pathology, gaining expertise in Clinical Laboratory practices.

CNPO5: Students can implement strategies for food access, procurement, preparation and safety individuals, families and communities and also apply food science knowledge to describe functions of ingredients, nutraceuticals, additives and safety measures in food.

CNPO6: Clinical Nutrition program produces caring, innovative dietetic leaders, practitioners and entrepreneurs to meet the complex needs of the evolving health care system. Currently food industry is shifting its focus from taste to nutrition.

CNPO7: Able to provide apply technical skills, knowledge of health behavior, clinical, judgment and decision –making skills when assessing and evaluation the nutritional status of individuals and communities and their response to nutrition intervention.

CNPO8: The curriculum provides about academic and experiential opportunities across the health spectrum to address the health of individuals, populations from prevention to palliation**,** maintain awareness and knowledge of current nutrition information issues and to managerial functions is families and system's approach to family resource management.

CNPO9: Provide evidence based medical nutrition therapy and nutrition assessment, intervention and educations to patients and residents to develop basic counseling skills as dietitian.The students should know the role of the information communication technologies in agriculture and allied sector Should be able to familiar with different extensions tools also know the Information Communication based technologies to successfully run any extension based projects

CNPO10: Participate in research activities that will contribute to nutrition knowledge and patient resident care also to appreciate the national and International contributor towards national improvement in alleviating nutrition problems in combating malnutrition.

CNPO11: Students will be able to assess nutritional status of individuals in various life cycle stages and determine nutrition related condition and disease by applying knowledge of metabolism and nutrient function, food sources, and physiological systems

CNPO12: To identify various life style disorders and with due counselling& guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy. Life style disorders, Yoga, counselling& Guidance, Public health & hygiene, Psychology and Sociology.

Course (Cs)

B.Sc Clinical Nutrition (CN) program under the CHOICE BASED CREDIT SYSTEM consists of following core courses namely: 1st Year B.Sc CN consists of Anatomy, Physiology, Biochemistry, Pathology, and Microbiology ; 2nd Year B.Sc CN consists of, Computer Application, Environmental Sciences, Nutritional Biochemistry, Food sciences Basic dietetics and Food microbiology; 3rd Year B.Sc CN consist of Food science-II, Advanced dietetics, Public health nutrition, Nutrition through life span; 4th Year – One year Internship. Also a**s per the UGC guidelines, during the study period an Allied Health Science Student will be studying Two Ability Enhancement compulsory courses, four Skill enhancement courses, two Generic Elective Courses and two Discipline Elective Courses.** Thus the B.Sc Clinical Nutrition (CN) program consists of following Electives courses, namely **Ability Enhancement compulsory course (AECC) consisting** of English and Environmental studies, **Skill enhancement courses namely** Culinary Skills for optimal nutrition, Enhancing soft skill & personality, Basics of Yoga & Practice, Speaking effectively, Good Clinical Laboratory practice, Computer Applications, Library and E-resource and Public Health and Hygiene, **Generic Elective Course** namely Basics of Hospital Administration, Counseling and Guidance, Lifestyle Disorders, Basic Psychology, Sociology and Entrepreneurship essentials, **Discipline Elective Courses namely** Biomedical Waste Management, Community Nutrition, Extension Education and Family Resource Management. Each course has its well defined course outcome mentioned in individual course book.

Mapping and analysis of Cs, POs and PEOs

The process of attainment of Cs, POs and PEOs starts from writing appropriate COs for each course in the three year plus one-year internship degree program. As Undergraduate Allied Health Science program is Non-regulatory, COs and POs are defined by SBV norms. Based on this, course outcomes are refined by the respective faculty members of the course using action verbs of learning levels as suggested by Bloom Taxonomy. Then, a correlation is established between Cs and POs and Cs and PEOs on the scale of 0 to 3 (‘0‘being no correlation, 1 being the low correlation, 2 being medium correlation and 3 being high correlation) based on their perception. The average score is calculated and is correlated with the courses as a whole not individually. The core paper & Elective course 33x5 mapping matrix of COs-PEOs **(Table.1)** and core paper & Elective course 33 x12 mapping matrix of Cs-POs **(Table.2)** is prepared at the institute level in this regard for all courses in the program. Radar graph was plotted to find out the level of correlation between PEO-Cs**(Fig.1)** and PO-Cs**(Fig.2**).

Table 1. CO-PEO Mapping matrix

S.NO	COURSE	PEO1	PEO2	PEO3	PEO4	PEO5
1.	Anatomy(AN)	3	2	1	3	3
2.	Physiology(PHY)	2	3	2	3	3
3.	Biochemistry(BIO)	3	2	3	3	3
4.	Pathology(PAT)	3	3	3	3	3

5.	Microbiology(MIC)	3	3	3	3	3
6.	English(ENG)	2	3	1	2	2
7.	Culinary Skills for optimal nutrition(NUTRI)	3	2	2	2	3
8.	Enhancing soft skill & personality(ESSP)	2	2	1	3	2
9.	Basics of Yoga & Practice	3	2	2	3	3
10.	Speaking effectively	3	3	2	3	2
11.	Basics of Hospital Administration(HOSP)	3	2	2	2	3
12.	Counseling and Guidance(COUNS)	2	2	1	3	2
13.	Lifestyle Disorders (LD)	3	2	2	3	3
14.	Nutritional Biochemistry (NB)	2	1	1	2	1
15.	Food Science (FS)	1	2	3	3	2
16.	Food Microbiology (FM)	2	2	3	2	3
17.	Basic Dietetics(BD)	3	2	3	2	1
18.	Environmental studies	2	3	2	3	3
19.	Good Clinical Laboratory practice	3	3	3	2	3
20.	Computer Applications	3	2	1	3	2
21.	Library and E-resource	3	2	2	3	2
22.	Public Health and Hygiene	2	2	3	2	3
23.	Basic Psychology	3	2	2	3	3
24.	Sociology	2	3	3	3	2
25.	Entrepreneurship essentials	3	2	2	3	3
26.	Food Science-II (FS-II)	2	2	2	3	2
27.	Advanced Dietetics(AD)	3	1	3	2	3
28.	Public Health Nutrition(PHN)	3	3	2	3	2
29.	Nutrition for Life Span(NS)	3	2	1	2	2
30.	Biomedical waste Management	2	2	1	2	1
31.	Community Nutrition	3	3	2	3	3
32.	Extension Education	2	2	1	1	2
33.	Family Resource Management	1	2	2	2	3

AVERAGE SCORE	2.51	2.24	2.03	2.57	2.45

CO-PEO Mapping

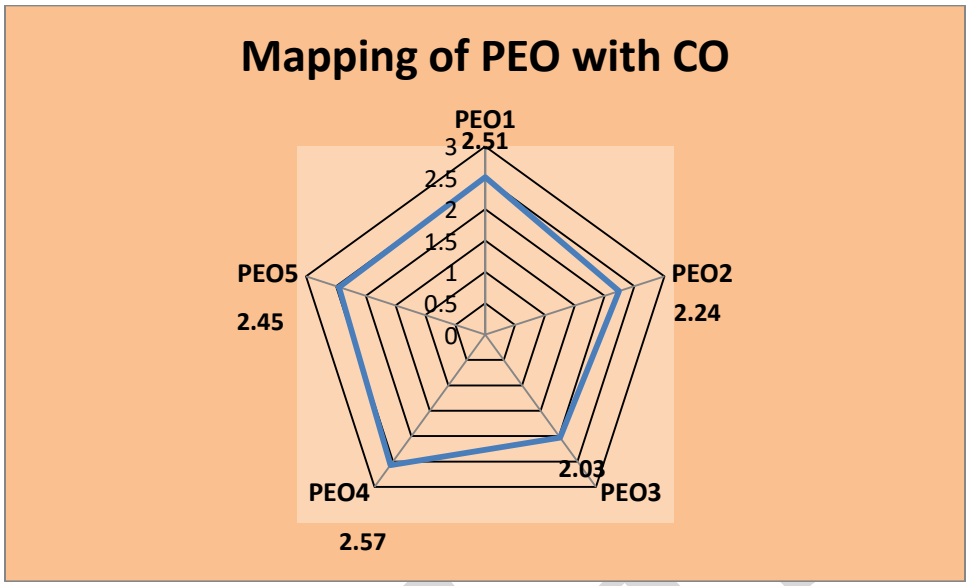

Figure 1. Mapping of Program educational objectives & course
(0 - no correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation)

S.NO	COURSE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	P012
1.	Anatomy(AN)	2	2	3	2	2	0	1	1	2	2	2	2
2.	Physiology(PHY)	3	2	3	3	2	1	3	2	0	1	2	2
3.	Biochemistry(BIO)	3	2	2	3	2	3	3	2	2	3	2	2
4.	Pathology(PAT)	3	3	2	3	3	3	2	3	2	3	2	2
5.	Microbiology(MIC)	3	3	2	3	3	3	2	3	2	3	2	2
6.	English(ENG)	2	2	1	1	2	1	1	2	1	1	2	2
7.	Culinary Skills for optimal nutrition(NUTRI)	2	1	1	1	3	2	3	3	2	1	3	2
8.	Enhancing soft skill & personality(ESSP)	2	1	1	1	0	1	1	1	2	2	2	2
9.	Basics of Yoga & Practice	2	1	2	2	1	2	2	1	1	2	1	3
10.	Speaking effectively	2	1	0	1	1	2	3	2	2	2	2	2
11.	Basics of Hospital Administration(HOSP)	2	2	1	2	2	2	2	2	2	2	2	1
12.	Counseling and Guidance(COUNS)	2	2	1	1	1	2	1	2	2	2	2	2
13.	Lifestyle Disorders (LD)	2	1	2	2	2	2	2	2	2	1	1	3
14.	Nutritional Biochemistry (NB)	2	2	2	2	3	3	3	3	2	2	1	1
15.	Food Science (FS)	3	3	2	2	3	2	3	2	2	2	1	3
16.	Food Microbiology (FM)	2	3	3	2	3	3	3	2	2	3	3	2
17.	Basic Dietetics(BD)	3	2	2	3	3	3	2	3	2	3	2	3
18.	Environmental studies	2	2	0	0	1	1	2	2	1	1	1	13
19.	Good Clinical Laboratory practice	2	3	3	3	2	2	2	1	1	1	1	0
20.	Computer Applications	3	2	2	2	2	2	2	2	3	2	3	2
21.	Library and E-resource	3	3	2	3	3	2	2	2	2	2	2	2
22.	Public Health and Hygiene	3	2	3	2	2	2	2	2	2	2	2	3
23.	Basic Psychology	3	1	2	2	2	2	1	1	1	1	2	1

24.	Sociology	3	1	1	1	1	2	1	1	1	1	2	3
25.	Entrepreneurship essentials	2	1	2	2	2	2	2	3	1	1	2	2
26.	Food Science-II (FS-II)	3	2	2	3	2	2	3	3	2	2	2	3
27.	Advanced Dietetics(AD)	2	2	2	3	2	2	2	3	2	3	2	1
28.	Public Health Nutrition(PHN)	2	2	3	2	3	3	3	2	2	2	3	2
29.	Nutrition for Life Span(NS)	2	3	2	3	2	2	2	3	3	2	3	2
30.	Biomedical waste Management	2	3	2	3	2	2	2	2	1	2	1	0
31.	Community Nutrition	3	1	2	2	2	2	2	2	2	3	2	3
32.	Extension Education	3	1	1	1	3	2	3	2	2	3	2	1
33.	Family Resource Management	2	1	1	1	3	2	2	1	1	2	2	2
AVERAGE SCORE		**2.42**	**1.90**	**1.81**	**2.03**	**2.12**	**2.03**	**2.12**	**2.06**	**1.72**	**1.96**	**1.93**	**2.30**

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation).

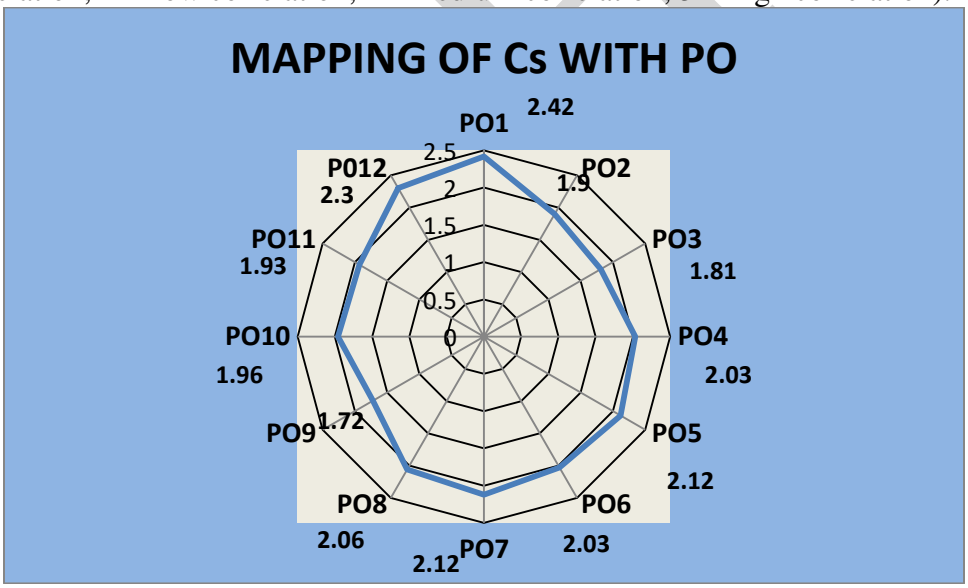

Figure 2. Mapping of Program outcome &course
(0 - No correlation; 1 - Low correlation; 2 - Medium correlation; 3- High correlation)

Analysis of Cs, POs and PEOs:

On analyzing, the average score of individual program outcome ranges from 1.92 to 2.42. It shows, there exist a strong correlation of all Cs with that of PO1 & PO4, whereas medium correlation between Cs and PO2 to PO 10. Similarly, on analyzing, the average score of individual program educational objectives ranges from 2.1 to 2.57. It shows, there exist a strong correlation of all Cs with that of PEO2 & PEO4, whereas medium correlation between Cs and PEO, PEO3 & PEO 5.

UNDER GRADUATE

10. Bachelor of Medical Record Sciences (BMRSc)

Program Educational Objectives (PEO)

Program educational objectives for under graduate program are as follows:

- **PEO1:** A technical expert who genuinely gets involved in patient care and does multi-task responsibilities.
- **PEO 2**: Communicators possessing adequate communication skills to convey the required information in an appropriate manner in various health care settings.
- **PEO 3:** Demonstrate basic administration/management and leadership skills.
- **PEO 4:**Lifelong learner is keen on updating oneself regarding the technical advancement in the health care field and able to perform the role of a good technologist and /or, researcher and teacher.
- **PEO 5:**Medical record Technician who understands and follows the principle of bio-ethics / ethics related to the health care system.

Program outcome (PO)

At the end of the 4 year of Bachelor of Medical Record Sciences (BMRSc) students should be able to

- **BMRPO1:** Performs the duty as a Medical record Technician with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library.
- **BMRPO2:** To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases.
- **BMRPO3:** Understanding the structure and functions of different organs in normal human body.
- **BMRPO4:** To learn the general Biochemistry, Microbiology and Pathology, gaining expertise in Clinical Laboratory practices
- **BMRPO5:** To analyse the data, record as well as the quality data management.
- **BMRPO6:** Ability to perform all biological samples which includes various staining techniques and to operate the patient's data in Hospital Information System (HIS) or WHONET or AOSTA.
- **BMRPO7:**Able to monitor the mortality rate of the hospital wards and intensive care units
- **BMRPO8:**Collect the hospital statistical data like birth, death, deceased and non- deceased

etc.,

- **BMRPO9:** To know the development of the individual history of Medical Records During different periods
- **BMRPO10:**Know how to entries of the patient details and also to maintain the quality of the medical records
- **BMRPO11**: Demonstrate knowledge about the first Aid process, healthcare sector, diagnostic services and Plays a vital role in Hospital infection control.
- **BMRPO12**: To identify various life style disorders and with due counseling& guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy.

Course (Cs)

Bachelor of Medical Record Sciences (BMRSc) program under the CHOICE BASED CREDIT SYSTEM consists of following core courses namely: 1stYear BMRSc consists of Anatomy, Physiology, Biochemistry, Pathology, and Microbiology ; 2ndYear BMRSc consists of, Bio-Statistics, Hospital Statistics, Information Technology I, Medical Terminology I & Health Information Management I & Nomenclature; 3rdYear BMRSc consist of Hospital Organization, Administration Medical Ethics and Consumer Protection Act , Health Information Management , Medical Transcription And Telemedicine, Hospital Accounting, Financial Accounting, Health Insurance And Billing Design and Medical Terminology II;4th Year – One year Internship.

Also a**s per the UGC guidelines, during the study period an Allied Health Science Student will be studying Two Ability Enhancement compulsory courses, four Skill enhancement courses, two Generic Elective Courses and two Discipline Elective Courses.** Thus theBachelor of Medical Record Sciences (BMRSc) program consists of following Electives courses, namely **Ability Enhancement compulsory course (AECC) consisting** of English and Environmental studies, **Skill enhancement courses namely** Culinary Skills for optimal nutrition, Enhancing soft skill & personality, Basics of Yoga & Practice, Speaking effectively, Good Clinical Laboratory practice, Computer Applications, Library and E-resource and Public Health and Hygiene, **Generic Elective Course** namely Basics of Hospital Administration, Counseling and Guidance, Lifestyle Disorders, Basic Psychology, Sociology and Entrepreneurship essentials, **Discipline Elective Courses namely** Biomedical Waste Management, Medical informatics&Aosta software Hospital Management system. Each course has its well defined course outcome mentioned in individual course book.

Mapping and analysis of Cs, POs and PEOs

The process of attainment of Cs, POs and PEOs starts from writing appropriate COs for each course in the three year plus one year internship degree program. As Undergraduate Allied Health Science program is Non-regulatory, COs and POs are defined by SBV norms. Based on this, course outcomes

are refined by the respective faculty members of the course using action verbs of learning levels as suggested by Bloom Taxonomy. Then, a correlation is established between Cs and POs and Cs and PEOs on the scale of 0 to 3 ('0'being no correlation, 1 being the low correlation, 2 being medium correlation and 3 being high correlation) based on their perception. The average score is calculated and is correlated with the courses as a whole not individually. The core paper & Elective course 32x5 mapping matrix of COs-PEOs **(Table.1)** and core paper & Elective course 32 x12 mapping matrix of Cs-POs **(Table.2)** is prepared at the institute level in this regard for all courses in the program. Radar graph was plotted to find out the level of correlation between PEO-Cs **(Fig.1)** and PO-Cs**(Fig.2).**

Table 1. CO-PEO Mapping matrix

S.NO	COURSE	PEO1	PEO2	PEO3	PEO4	PEO5
1.	Anatomy(AN)	3	2	2	3	2
2.	Physiology(PHY)	2	3	2	2	3
3.	Biochemistry(BIO)	3	2	3	3	3
4.	Pathology(PAT)	3	2	2	3	3
5.	Microbiology(MIC)	3	3	3	3	3
6.	English (ENG)	3	3	2	3	2
7.	Culinary Skills for optimal nutrition(NUTRI)	3	2	2	2	3
8.	Enhancing soft skill & personality(ESSP)	2	2	2	3	2
9.	Basics of Yoga & Practice	3	3	2	3	3
10.	Speaking effectively	3	3	2	3	2
11.	Basics of Hospital Administration(HOSP)	3	2	2	3	3
12.	Counseling and Guidance(COUNS)	2	2	2	3	2
13.	Lifestyle Disorders (LD)	2	2	2	3	2
14.	Bio-Statistics, Hospital Statistics	3	3	2	3	3
15.	Information Technology I	3	3	3	3	2
16.	Medical Terminology I	3	3	2	3	3
17.	Health Information Management I & Nomenclature	3	3	2	3	3
18.	Environmental studies	2	3	2	3	3
19.	Good Clinical Laboratory practice	3	3	2	2	3
20.	Computer Applications	3	2	2	3	2
21.	Library and E-resource	3	2	2	3	2

22.	Public Health and Hygiene	2	2	3	2	3
23.	Basic Psychology	3	2	2	3	3
24.	Sociology	2	3	3	3	2
25.	Entrepreneurship essentials	2	1	1	3	2
26.	Hospital Organization, Administration Medical Ethics and Consumer Protection Act	3	3	3	3	3
27.	Health Information Management, Medical Transcription And Telemedicine	3	2	2	3	3
28.	Hospital Accounting, Financial Accounting, Health Insurance and Billing Design	3	3	3	2	3
29.	Medical Terminology II	3	2	2	3	3
30.	Biomedical Waste Management	3	3	2	3	3
31.	Medical Informatics	3	2	3	2	3
32.	Aosta Software Hospital Management System	3	2	2	3	3
Average		**2.75**	**2.43**	**2.21**	**2.81**	**2.65**

CO-PEO Mapping

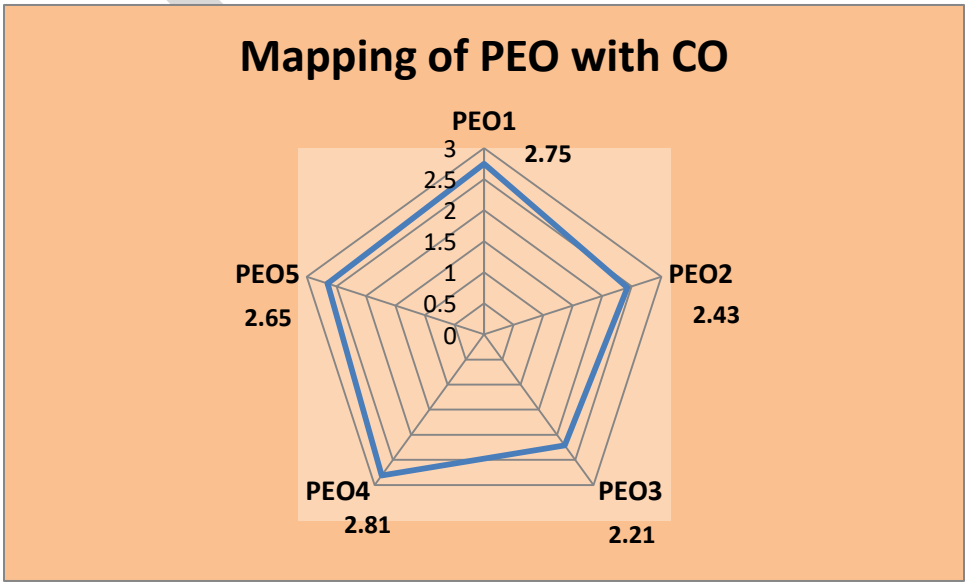

Figure 1. Mapping of Program educational objectives& course
(0 - no correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation)

Table 2. Cs-PO Mapping matrix

S.NO	COURSE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	P012
1.	Anatomy(AN)	3	2	2	2	2	0	1	2	1	3	2	2
2.	Physiology(PHY)	3	3	3	3	2	1	3	2	2	1	2	2
3.	Biochemistry(BIO)	2	2	2	2	3	3	3	2	2	3	2	2
4.	Pathology(PAT)	3	3	2	3	2	3	2	3	2	3	2	3
5.	Microbiology(MIC)	3	3	2	3	3	3	2	3	2	3	2	2
6.	English(ENG)	2	2	1	2	0	1	2	0	2	1	2	3
7.	Culinary Skills for optimal nutrition(NUTRI)	2	2	2	0	0	3	0	1	2	2	1	2
8.	Enhancing soft skill & personality(ESSP)	2	3	2	2	1	2	2	1	2	2	2	3
9.	Basics of Yoga & Practice	3	2	1	2	1	1	0	0	2	1	2	2
10.	Speaking effectively	2	2	1	2	2	3	2	1	2	2	2	2
11.	Basics of Hospital Administration (HOSP)	3	2	2	2	1	1	2	1	2	2	2	3
12.	Counseling and Guidance(COUNS)	3	2	2	2	0	1	1	2	2	3	2	2
13.	Lifestyle Disorders (LD)	3	2	2	1	2	3	2	1	2	0	1	3
14.	Bio-Statistics, Hospital Statistics	3	2	2	2	1	2	2	1	2	2	2	3
15.	Information Technology I	3	3	2	3	2	3	3	3	1	3	2	3
16.	Medical Terminology I	3	2	3	2	3	3	2	3	3	2	3	3
17.	Health Information Management I & Nomenclature	3	2	2	3	3	2	3	3	3	2	3	2
18.	Environmental studies	3	2	1	3	2	3	1	1	2	2	1	3
19.	Good Clinical Laboratory practice	2	2	3	2	1	1	2	1	3	2	2	3
20.	Computer	3	3	2	2	3	3	3	3	1	3	2	3

	Applications												
21.	Library and E-resource	3	2	3	2	2	3	2	1	2	2	1	1
22.	Public Health and Hygiene	3	2	1	2	2	3	1	1	2	2	1	3
23.	Basic Psychology	2	2	3	2	1	1	2	1	3	2	2	3
24.	Sociology	3	2	2	2	3	3	3	3	1	3	2	3
25.	Entrepreneurship essentials	3	2	3	2	2	3	2	1	2	2	1	3
26.	Hospital Organization, Administration Medical Ethics and Consumer Protection Act	3	2	1	2	2	3	1	2	3	2	2	3
27.	Health Information Management, Medical Transcription And Telemedicine	3	2	3	2	2	3	2	3	3	2	3	3
28.	Hospital Accounting, Financial Accounting, Health Insurance and Billing Design	3	3	2	2	3	3	3	3	2	3	2	3
29.	Medical Terminology II	3	2	1	2	2	3	2	1	2	0	1	1
30.	Biomedical Waste Management	3	2	2	2	2	3	1	2	2	2	2	3
31.	Medical Informatics	3	2	3	2	1	2	2	1	3	2	2	3
32.	Aosta Software Hospital Management System	3	2	2	3	3	2	3	3	2	3	2	3
AVERAGE SCORE		**2.7**	**2.21**	**2.03**	**2.1**	**1.9**	**2.3**	**1.9**	**1.75**	**2.09**	**2.09**	**1.8**	**2.5**

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation).

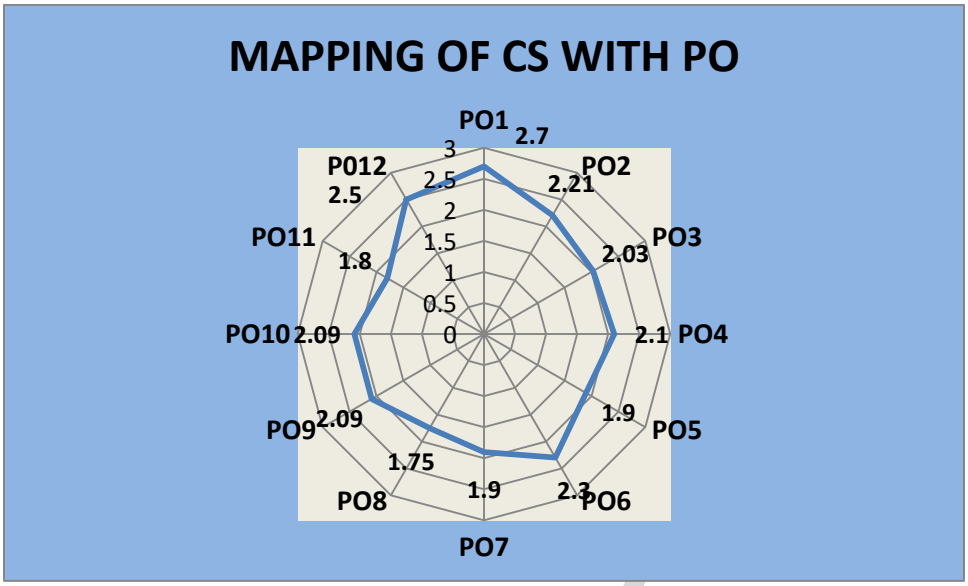

Figure 2. Mapping of Program outcome &course

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation)

Analysis of Cs, POs and PEOs:

On analyzing, the average score of individual program outcome ranges from 1.8 to 2.7. It shows, there exist a strong correlation of all Cs with that of PO1 & PO12, whereas mediumcorrelation between Cs and PO2, PO6 & PO12. Similarly, on analyzing, the average score of individual program educational objectives ranges from 2.21 to 2.8. It shows, there exist a strong correlation of all Cs with that of PEO1 & PEO4, whereas medium correlation between Cs and PEO2, PEO3& PEO5.

UNDER GRADUATE

11. B.Sc. Dialysis Technology

Program Educational Objectives (PEO)

Program educational objectives for under graduate program are as follows:

- **PEO1:** A technical expert who genuinely gets involved in patient care and does multi-task responsibilities.
- **PEO 2**: Communicators possessing adequate communication skills to convey the required information in an appropriate manner in various health care settings.
- **PEO 3:** Demonstrate basic administration/management and leadership skills.
- **PEO 4:** Lifelong learner is keen on updating oneself regarding the technical advancement in the health care field and able to perform the role of a good technologist and /or, researcher and teacher.

- **PEO 5:** Technologist who understands and follows the principle of bio-ethics / ethics related to the health care system.

Program Outcomes for DT

DTPO1: Performs the duty as Dialysis Technologist with leadership qualities having a good written & communication skills and also skilled at computer application including E- Library.

DTPO2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases.

DTPO3: To study about the structure and functions of different organs in normal human body

DTPO4: To learn the general Biochemistry, Microbiology and Pathology gaining expertise in clinical laboratory practices

DTPO5: To learn about patient care and basic life support, role of dialysis technologist in dialysis, Medication and drugs used in procedure communication and documentations of dialysis and transplant workup and basic psychology counseling

DTPO6: To start and withdrawal of hemodialysis, connectology of peritoneal dialysis patient education about the procedures and basic airway management during the treatment

DTPO7: To know about vascular access temporary and permanent Arterio Venous access AVF/AVG complication cannulation techniques and management. To learn about peritoneal catheters and it types

DTPO8: To manage the circuits management alarms, RO water preparation and distribution, dialyzer membrane and tubing, dialysate preparations

DTPO9: To know how to handle the complication of hemodialysis with using drugs and pharmacology, adequacy of hemodialysis, techniques of disinfection, reusing techniques dialyzer reuse

DTPO10: To learn in detail about the advance procedures like Hemoperfusion, Plasmapheresis, CRRT, SLED, and SCUF, Basic Assessment and Intensive Care for the procedures.
DTPO11: To learn about anatomy and physiology of PD and transport, complication of PD catheters, infection, and complication of PD adequacy of PD

DTPO12:TO learn about renal transplant, brain death, Renal diet, immunosuppressive medications and palliative care management in various life style disorders and with due counseling & guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behaviour healthy.

Course (Cs)

B.Sc. Dialysis Technology (DT) program under the CHOICE BASED CREDIT SYSTEM consists of following core courses namely: 1stYear B.Sc. DT consists of Anatomy, Physiology, Biochemistry, Pathology, and Microbiology ; 2ndYear B.Sc. DT consists of, Basic of Renal Disease, Basic of Hemodialysis, Hemodialysis apparatus, Hemodialysis Procedure,3rdYear B.Sc. DT consist of Vascular Access an Complication, Dialysis in Special Situations, Peritoneal Dialysis , Renal Transplantation and Recent Advances 4th Year – One year Internship. Also a**s per the UGC guidelines, during the study period an Allied Health Science Student will be studying Two Ability Enhancement compulsory courses, four Skill enhancement courses, two Generic Elective Courses and two Discipline Elective Courses.** Thus the B.Sc. Dialysis Technology (DT) program consists of following Electives courses, namely **Ability Enhancement compulsory course**

(AECC) consisting of English and Environmental studies, **Skill enhancement courses namely** Culinary Skills for optimal nutrition, Enhancing soft skill & personality, Basics of Yoga & Practice, Speaking effectively, Good Clinical Laboratory practice, Computer Applications, Library and E-resource and Public Health and Hygiene, **Generic Elective Course** namely Basics of Hospital Administration, Counseling and Guidance, Lifestyle Disorders, Basic Psychology, Sociology and Entrepreneurship essentials, **Discipline Elective Courses namely** Biomedical Waste Management, Assessment and Support in Intensive Care, Palliative care and Basic Airway Management .Each course has its well defined course outcome mentioned in individual course book.

Mapping and analysis of Cs, POs and PEOs

The process of attainment of Cs, POs and PEOs starts from writing appropriate COs for each course in the three year plus one year internship degree program. As Undergraduate Allied Health Science program is Non-regulatory, COs and POs are defined by SBV norms. Based on this, course outcomes are refined by the respective faculty members of the course using action verbs of learning levels as suggested by Bloom Taxonomy. Then, a correlation is established between Cs and POs and Cs and PEOs on the scale of 0 to 3 ('0'being no correlation, 1 being the low correlation, 2 being medium correlation and 3 being high correlation) based on their perception. The average score is calculated and is correlated with the courses as a whole not individually. The core paper & Elective course 33x5 mapping matrix of COs-PEOs **(Table.1)** and core paper & Elective course 33 x13 mapping matrix of Cs-POs **(Table.2)** is prepared at the institute level in this regard for all courses in the program. Radar graph was plotted to find out the level of correlation between PEO-Cs **(Fig.1)** and PO-Cs**(Fig.2).**

Table 1. CO-PEO Mapping matrix

	COURSE	PEO1	PEO2	PEO3	PEO4	PEO5
1.	Anatomy(AN)	3	2	1	3	3
2.	Physiology(PHY)	2	3	2	3	3
3.	Biochemistry(BIO)	3	2	3	3	3
4.	Pathology(PAT)	3	3	3	3	3
5.	Microbiology(MIC)	3	3	3	3	3
6.	English(ENG)	2	3	1	2	2
7.	Culinary Skills for optimal nutrition(NUTRI)	3	2	2	2	3
8.	Enhancing soft skill & personality(ESSP)	2	2	1	3	2
9.	Basics of Yoga & Practice	3	2	2	3	3
10.	Speaking effectively	3	3	2	3	2
11.	Basics of Hospital Administration (HOSP)	3	2	2	2	3
12.	Counseling and Guidance(COUNS)	2	2	1	3	2

13.	Lifestyle Disorders (LD)	3	2	2	3	3
14.	Basic of Renal Diseases	3	3	2	3	3
15.	Basic of Hemodialysis	3	3	2	3	3
16.	Hemodialysis Apparatus	3	3	2	3	3
17.	Hemodialysis Procedure	3	2	3	3	3
18.	Environmental studies	2	3	1	3	3
19.	Good Clinical Laboratory practice	3	3	3	2	3
20.	Computer Applications	2	3	2	2	1
21.	Library and E-resource	3	2	2	3	2
22.	Public Health and Hygiene	2	2	3	2	3
23.	Basic Psychology	3	2	2	3	3
24.	Sociology	2	3	3	3	2
25.	Entrepreneurship essentials	3	2	2	3	3
26.	Vascular Access and Complication	3	3	2	3	3
27.	Dialysis in Special Situations	3	3	2	3	3
28.	Peritoneal Dialysis	3	2	3	2	3
29.	Renal Transplantation and Recent Advances	3	3	2	3	3
30.	Biomedical Waste Management	3	3	2	3	3
31.	Basic Airway management	3	2	3	2	2
32.	Palliative care	3	3	2	3	3
33.	Assessment and support in intensive care	3	2	2	3	3
AVERAGE SCORE		**2.7**	**2.4**	**2.1**	**2.7**	**2.6**

CO-PEO Mapping

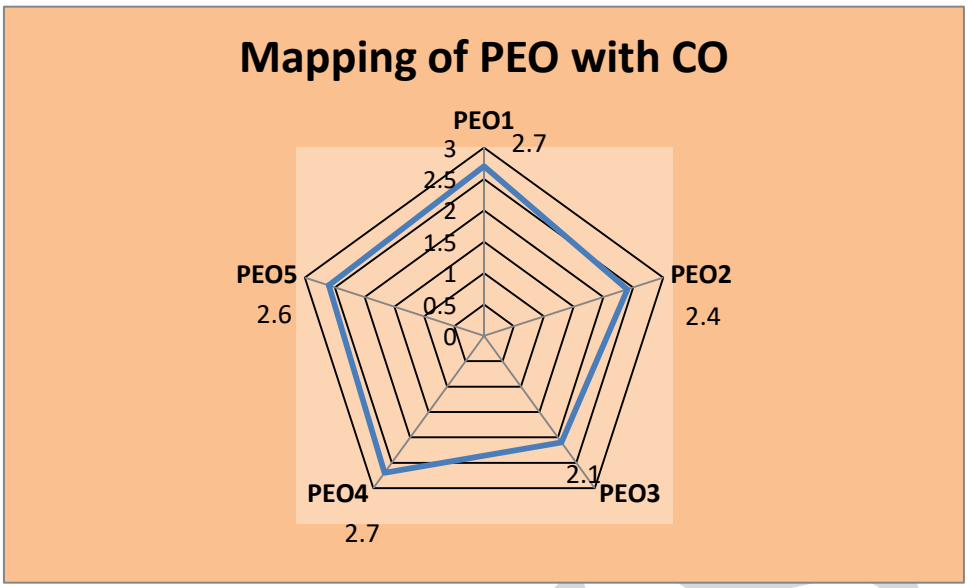

Figure 1. Mapping of Program educational objectives& course
(0 - no correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation)

Table 2. Cs-PO Mapping matrix

S.NO	COURSE	PO 1	PO2	PO 3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	P012	P013
1.	Anatomy(AN)	2	2	3	2	2	3	1	3	2	2	2	3	3
2.	Physiology(PHY)	1	2	3	3	2	2	2	3	2	2	3	2	3
3.	Biochemistry(BIO)	1	3	3	2	2	3	1	3	2	2	1	2	3
4.	Pathology(PAT)	1	2	2	3	2	3	2	2	3	3	3	2	2
5.	Microbiology(MIC)	1	3	1	3	2	2	3	3	1	3	1	2	3
6.	English(ENG)	3	2	2	2	2	1	1	2	2	2	2	3	2
7.	Culinary Skills for optimal nutrition(NUTRI)	2	2	1	2	2	3	0	2	2	2	1	1	3
8.	Enhancing soft skill & personality(ESSP)	2	2	2	2	1	2	2	2	2	2	2	3	2
9.	Basics of Yoga & Practice	3	2	1	1	1	1	0	0	2	1	2	2	3
10.	Speaking effectively	2	2	1	2	1	3	2	2	2	2	1	1	2
11.	Basics of Hospital Administration (HOSP)	3	2	2	2	2	2	2	2	2	2	2	3	3
12.	Counseling and Guidance(COUNS)	3	2	2	2	0	1	1	2	2	2	2	2	2

13.	Lifestyle Disorders (LD)	3	2	2	1	2	3	2	3	2	2	1	1	3
14.	Basic of Renal Diseases	3	1	3	2	3	3	2	3	2	3	2	0	2
15.	Basic of Hemodialysis	3	1	2	2	2	2	3	3	2	3	3	3	2
16.	Hemodialysis Apparatus	3	2	2	2	3	2	2	2	2	3	3	3	3
17.	Hemodialysis Procedure	3	3	2	3	2	1	3	2	3	3	3	2	3
18.	Computer Science(COMP)	3	2	1	2	3	3	3	1	2	1	2	0	3
19.	Good Clinical Laboratory practice	2	2	3	2	1	1	2	1	3	2	2	3	2
20.	Environmental Sciences(EVS)	1	3	2	2	2	1	2	2	3	2	2	0	3
21.	Library and E-resource	3	2	3	2	3	3	2	2	3	3	1	1	2
22.	Public Health and Hygiene	3	2	1	2	2	3	3	2	2	3	1	3	3
23.	Basic Psychology	2	2	3	2	3	1	2	2	3	2	2	3	2
24.	Sociology	3	2	2	2	3	3	3	3	2	3	2	3	3
25.	Entrepreneurship essentials	3	2	3	2	3	3	2	2	2	3	1	3	2
26.	Vascular Access and Complication	3	2	1	2	3	2	2	3	3	3	3	3	3
27.	Dialysis in Special Situations	3	1	1	2	3	3	3	3	3	2	3	3	3
28.	Peritoneal Dialysis	3	2	3	2	1	2	3	3	2	2	3	2	3
29.	Renal Transplantation and Recent Advances	3	3	2	3	2	1	3	3	3	2	2	2	2
30.	Biomedical Waste Management	3	2	1	2	3	3	2	2	2	2	2	1	2
31.	Assessment and Support in Intensive Care	3	2	1	2	3	3	3	2	3	3	2	3	2
32.	Palliative care	3	2	3	2	1	2	3	3	3	3	2	3	3
33.	Basic Airway Management	3	2	2	2	3	2	3	3	3	3	2	3	3
AVERAGE SCORE		**2.4**	**2.0**	**1.9**	**2.0**	**2.1**	**2.1**	**2.1**	**2.2**	**2.3**	**2.3**	**1.9**	**2.1**	**2.5**

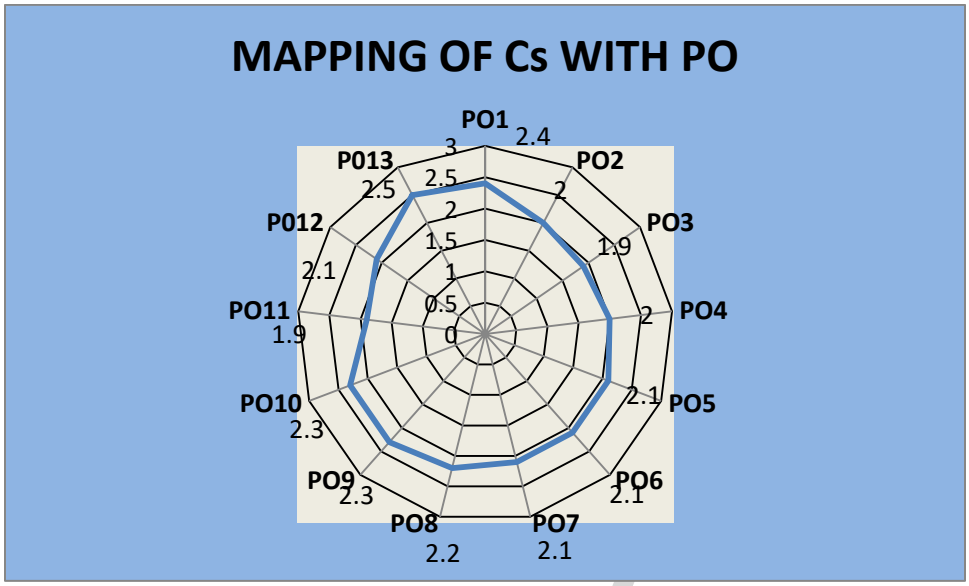

Figure 2. Mapping of Program outcome &course

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation)

Analysis of Cs, POs and PEOs:

On analyzing, the average score of individual program outcome ranges from 1.9 to 2.5. It shows, there exist a strong correlation of all Cs with that of PO1 & PO13, whereas mediumcorrelation between Cs and PO8, PO9 & PO10. Similarly, on analyzing, the average score of individual program educational objectives ranges from 2.1 to 2.7. It shows, there exist a strong correlation of all Cs with that of PEO1 & PEO4, whereas medium correlation between Cs and PEO2, PEO3& PEO5.

UNDER GRADUATE

12. B.Sc. Urology Technology

Program Educational Objectives (PEO)

Program educational objectives for under graduate program are as follows:

- **PEO1:** A technical expert who genuinely gets involved in patient care and does multi-task responsibilities.
- **PEO 2**: Communicators possessing adequate communication skills to convey the required information in an appropriate manner in various health care settings.
- **PEO 3:** Demonstrate basic administration/management and leadership skills.
- **PEO 4:** Lifelong learner is keen on updating oneself regarding the technical advancement in the health care field and able to perform the role of a good technologist and /or, researcher and teacher.

- **PEO 5:** Uro-Technologists who understands and follows the principle of bio-ethics / ethics related to the health care system.

Program outcome (PO)

At the end of the 4 year of training B.Sc Urology technology students should be able to

UTPO1: Performs the duty as an Uro-Technologist with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library.

UTPO2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases.

UTPO3: Understanding the structure and functions of different organs in normal human body.

UTPO4: Phlebotomists are trained to draw blood primarily by performing venipunctures (for collection of minute quantities of blood and finger pricks).

UTPO5: Understanding the various method of sterilization used functional flow and maintenance of CSSD. Demonstrate the ability to sterilize urological instruments using physical and chemical method.

UTPO6: Learns about the theatre asepsis and its maintenance to manage indenting, record keeping and inventory maintenance.

UTPO7: To gain knowledge about the pharmacological aspect of some commonly used drugs and emergency medicine must be in position to list their indication therapeutic uses dilution, dosage and adverse effects.

UTPO 8: Able to assist urologist in surgical procedure like cystectomy, cystolithotomy, pyeloplasty, nephron-ureterectomy, nephrectomy, catheterization and stent replacement.

UTPO9 : Able to coordinate emergency resuscitative measures, administrate drug in various route and should provide adequate pre-operative, post-operative, and follow up
case of surgical patients.

UTPO10: Able to provide palliative care for Urological cancer patients and respond to emergency situation by providing CPR and assistin the provisionof advanced cardiac life support.

UTPO11: Develop and carry out well-organized patient management plans that support safe, effective and efficient care for both emergent and chronic condition as well as for preventive care.

UTPO12: To identify various life style disorders and with due counseling & guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behaviour healthy.

Course (Cs)

B.Sc Urology Technology (UT) program under the CHOICE BASED CREDIT SYSTEM consists of following core courses namely: 1stYear B.Sc UT consists of Anatomy, Physiology, Biochemistry, Pathology, and Microbiology ; 2ndYear B.Sc UT consists of, Clinical Pharmacology,Clinical Microbiology &Renal Pathology,Principles of Operation Theatre Management& Basics of Surgery &

Introduction to Urology Part - I; 3rdYear B.Sc UT consist of Urological Procedures Part II, Basics of Dialysis & Organ Transplantation, Medicine Outline & Medical Ethics and Emergency Medical Services; 4th Year – One year Internship. Also a**s per the UGC guidelines, during the study period an Allied Health Science Student will be studying Two Ability Enhancement compulsory courses, four Skill enhancement courses, two Generic Elective Courses and two Discipline Elective Courses.** Thus the B.Sc Urology Technology (UT) program consists of following Electives courses, namely **Ability Enhancement compulsory course (AECC) consisting** of English and Environmental studies, **Skill enhancement courses namely** Culinary Skills for optimal nutrition, Enhancing soft skill & personality, Basics of Yoga & Practice, Speaking effectively, Good Clinical Laboratory practice, Computer Applications, Library and E-resource and Public Health and Hygiene, **Generic Elective Course** namely Basics of Hospital Administration, Counseling and Guidance, Lifestyle Disorders, Basic Psychology, Sociology and Entrepreneurship essentials, **Discipline Elective Courses namely** Biomedical Waste Management, Basic assessment and support in intensive care, Palliative care& Basic airway management. Each course has its well defined course outcome mentioned in individual course book.

Mapping and analysis of Cs, POs and PEOs

The process of attainment of Cs, POs and PEOs starts from writing appropriate COs for each course in the three year plus one year internship degree program. As Undergraduate Allied Health Science program is Non-regulatory, COs and POs are defined by SBV norms. Based on this, course outcomes are refined by the respective faculty members of the course using action verbs of learning levels as suggested by Bloom Taxonomy. Then, a correlation is established between Cs and POs and Cs and PEOs on the scale of 0 to 3 (‘0‘being no correlation, 1 being the low correlation, 2 being medium correlation and 3 being high correlation) based on their perception. The average score is calculated and is correlated with the courses as a whole not individually. The core paper & Elective course 33x5 mapping matrix of COs-PEOs **(Table.1)** and core paper & Elective course 33 x12 mapping matrix of Cs-POs **(Table.2)** is prepared at the institute level in this regard for all courses in the program. Radar graph was plotted to find out the level of correlation between PEO-Cs **(Fig.1)** and PO-Cs **(Fig.2).**

Table 1. CO-PEO Mapping matrix

	COURSE	PEO1	PEO2	PEO3	PEO4	PEO5
1.	Anatomy(AN)	3	2	1	2	3
2.	Physiology(PHY)	2	3	2	3	3
3.	Biochemistry(BIO)	3	2	3	2	3
4.	Pathology(PAT)	3	2	2	3	3
5.	Microbiology(MIC)	3	3	2	3	3
6.	English(ENG)	2	3	2	3	2
7.	Culinary Skills for optimal nutrition(NUTRI)	3	2	2	2	3
8.	Enhancing soft skill & personality(ESSP)	2	3	2	3	3

9.	Basics of Yoga & Practice	3	2	2	3	3
10.	Speaking effectively	3	3	2	3	2
11.	Basics of Hospital Administration (HOSP)	3	2	2	2	3
12.	Counseling and Guidance(COUNS)	2	2	2	3	3
13.	Lifestyle Disorders (LD)	3	2	3	3	3
14.	Clinical Pharmacology	3	3	2	3	3
15.	Clinical Microbiology & Pathology.	3	3	3	3	3
16.	Principles of Operation Theatre Management	3	3	2	2	3
17.	Basics of Surgery & Introduction to Urology Part - I.	3	2	3	2	3
18.	Environmental studies	2	3	2	3	3
19.	Good Clinical Laboratory practice	3	3	3	2	3
20.	Computer Applications	2	3	3	3	1
21.	Library and E-resource	3	2	2	3	2
22.	Public Health and Hygiene	2	2	3	2	3
23.	Basic Psychology	3	2	2	3	3
24.	Sociology	2	3	3	3	2
25.	Entrepreneurship essentials	3	2	2	3	3
26.	Urological Procedures Part II	3	3	2	3	3
27.	Basics of Dialysis & Organ Transplantation	3	3	2	3	3
28.	Medicine Outline & Medical Ethics	3	2	3	2	3
29.	Emergency Medical Services.	3	3	3	3	3
30.	Biomedical Waste Management	3	3	2	3	3
31.	Basic Airway management	3	3	3	3	3
32.	Palliative care	2	3	2	2	3
33.	Assessment and support in intensive care	3	3	2	3	3
AVERAGE SCORE		**2.72**	**2.57**	**2.3**	**2.69**	**2.81**

CO-PEO Mapping

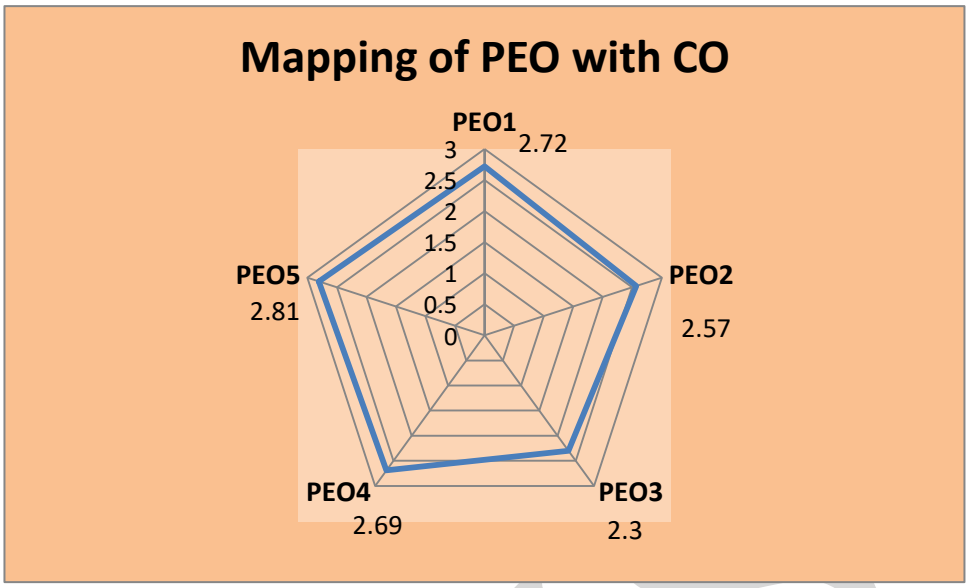

Figure 1. Mapping of Program educational objectives& course
(0 - no correlation; 1 - Low correlation; 2 - Medium correlation ; 3 - High correlation)

Table 2. Cs-PO Mapping matrix

S.NO	COURSE	PO1	PO2	PO3	PO4	PO5	PO 6	PO 7	PO 8	PO 9	PO 10	PO1 1	P012
1.	Anatomy(AN)	3	2	2	2	3	3	2	3	3	2	3	3
2.	Physiology(PHY)	2	2	3	3	2	2	2	3	2	2	3	2
3.	Biochemistry(BIO)	2	3	2	2	2	3	1	3	2	2	2	2
4.	Pathology(PAT)	3	2	2	3	2	2	2	2	3	3	3	3
5.	Microbiology(MIC)	3	2	1	3	2	3	3	3	2	3	1	3
6.	English(ENG)	3	2	2	2	2	1	1	2	2	2	2	3
7.	Culinary Skills for optimal nutrition(NUTRI)	2	2	1	2	2	3	0	2	2	2	3	1
8.	Enhancing soft skill & personality(ESSP)	2	2	2	3	1	2	2	2	3	2	2	3
9.	Basics of Yoga & Practice	3	2	2	1	2	1	0	0	2	2	2	2
10.	Speaking effectively	2	2	1	2	2	3	2	2	3	2	3	2
11.	Basics of Hospital Administration (HOSP)	3	2	2	3	2	2	2	3	3	2	2	3
12.	Counseling and Guidance(COUNS)	3	2	2	3	0	2	1	2	2	3	2	2
13.	Lifestyle Disorders (LD)	3	2	2	1	2	3	2	3	2	2	1	2

14.	Clinical Pharmacology	3	2	3	2	3	3	2	3	2	3	2	2
15.	Clinical Microbiology & Pathology.	3	3	2	2	2	2	3	3	2	3	3	3
16.	Principles of Operation Theatre Management	3	3	2	3	3	2	2	3	2	3	3	3
17.	Basics of Surgery & Introduction to Urology Part - I.	3	3	2	3	2	3	3	2	3	3	3	3
18.	Computer Science(COMP)	3	2	1	2	3	3	3	1	2	1	2	3
19.	Good Clinical Laboratory practice	2	2	3	2	1	1	2	1	3	2	2	3
20.	Environmental Sciences(EVS)	1	3	2	2	2	1	2	2	3	2	2	2
21.	Library and E-resource	3	2	3	2	3	3	2	2	3	3	1	2
22.	Public Health and Hygiene	3	2	2	2	2	3	3	2	2	3	1	3
23.	Basic Psychology	2	2	3	2	3	1	2	2	3	2	2	3
24.	Sociology	3	2	2	2	3	3	3	3	2	3	2	3
25.	Entrepreneurship essentials	3	3	2	2	3	2	2	2	2	3	2	3
26.	Urological Procedures Part II	3	2	1	2	3	2	2	3	3	3	3	3
27.	Basics of Dialysis & Organ Transplantation	3	1	1	2	3	3	3	3	3	2	3	3
28.	Medicine Outline & Medical Ethics	3	2	3	2	1	2	3	3	2	2	3	2
29.	Emergency Medical Services.	3	3	2	3	2	1	3	3	3	2	2	2
30.	Biomedical Waste Management	3	2	1	2	3	3	2	2	2	2	2	1
31.	Assessment and Support in Intensive Care	3	2	1	2	3	3	3	2	3	3	2	3
32.	Palliative care	3	2	3	2	1	2	3	3	3	3	2	3
33.	Basic Airway Management	3	2	2	2	3	2	3	3	3	3	2	3
AVERAGE SCORE		**2.72**	**2.18**	**1.96**	**2.21**	**2.21**	**2.27**	**2.15**	**2.36**	**2.48**	**2.42**	**2.21**	**2.54**

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation).

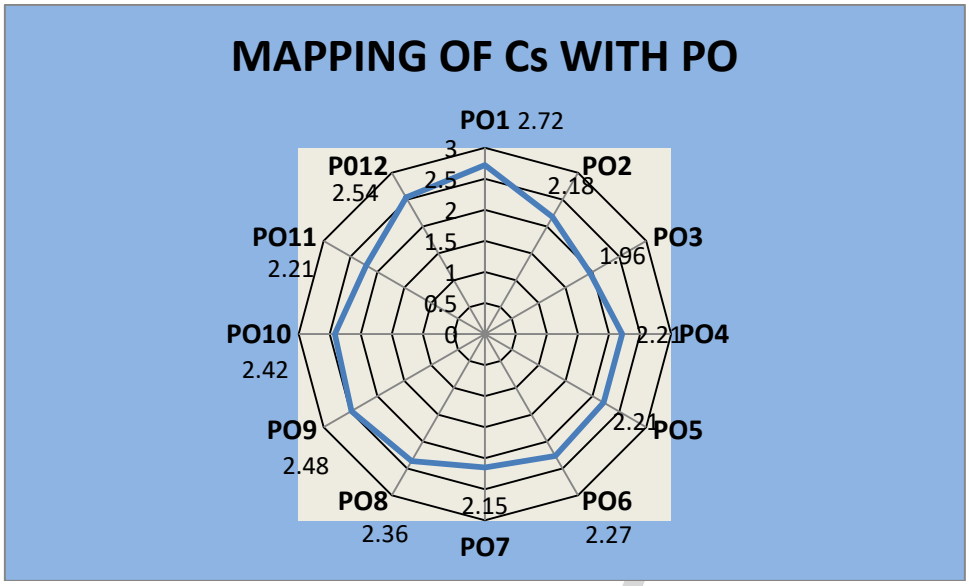

Figure 2. Mapping of Program outcome &course

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation)

Analysis of Cs, POs and PEOs:

On analyzing, the average score of individual program outcome ranges from 1.96 to 2.72. It shows, there exist a strong correlation of all Cs with that of PO1 & PO12, whereas medium correlation between Cs and PO9 & PO10. Similarly, on analyzing, the average score of individual program educational objectives ranges from 2.3 to 2.81. It shows, there exist a strong correlation of all Cs with that of PEO1& PEO5, whereas medium correlation between Cs and PEO2, PEO3& PEO4.

UNDER GRADUATE

13. B.Sc. Blood Bank Technology

Program Educational Objectives (PEO)

Program educational objectives for under graduate program are as follows:

- **PEO 1:** A technical expert who genuinely gets involved in patient care and does multi-task responsibilities.
- **PEO 2:** Communicators possessing adequate communication skills to convey the required information in an appropriate manner in various health care settings.
- **PEO 3:** Demonstrate basic administration/management and leadership skills.
- **PEO 4:** Lifelong learner is keen on updating oneself regarding the technical advancement in the health care field and able to perform the role of a good technologist and /or, researcher and teacher.
- **PEO 5:** Technologist who understands and follows the principle of bio-ethics / ethics related to the health care system

Program outcome (PO)

At the end of the 3 year of training under graduates of Blood Bank Technologist Should be able to

BBT -PO1: Performs the duty as a blood bank Technologist, with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library.

BBT -PO2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases.

BBT -PO3: Understanding the structure and functions of different organs in normal human body.

BBT -PO4: To learn the general Biochemistry, Microbiology and Pathology, gaining expertise in Clinical Laboratory practices.

BBT -PO5: Know how to follow sample acceptance and rejection criteria and also to pack, transport and store the samples.

BBT –PO6: Understanding of blood bank department and organization in a hospital

BBT –PO7: To gain knowledge about collection and processing, including selecting donors, collecting blood, blood group typing and molecular testing and drug reactions.

BBT –PO8: To Learns the test for blood group antigens, compatibility and antibody identification, Check blood for any viral/bacterial infections. Be cautious of transfusion- transmission infections

BBT PO9: Understand the basic concepts of hematology and blood components in detail

BBT -PO10: Understand the immune hematological tests

BBT -PO11: To learn the transfusion therapy and newly advanced blood bank equipment's require for process

BBT -PO12: Understand Quality control, Quality policy, quality manual, Internal and external audit and process control

BBT PO13: Understand stem cell preparation, recent advances in blood banking and apheresis

BBTPO14: To identify various life style disorders and with due counseling & guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy

Course (Cs)

B.Sc. Blood Bank Technology (BBT) program under the CHOICE BASED CREDIT SYSTEM consists of following core courses namely: 1stYear B.Sc BBT consists of Anatomy, Physiology, Biochemistry, Pathology, and Microbiology ; 2ndYear B.Sc BBT consists of, Computer Application, Environmental Sciences, Introduction to Blood Banking and Blood Banking Organization , Blood Donation & Donor Management, Basic –IH (Immunohematology) & Transfusion Transmitted Infection- Serology Basic Principles of Red Cell Immuno Hematology and Basic Hematology Blood

Components; 3rdYear B.Sc BBT consist of Advanced Immunohematology & Immunology, Transfusion Therapy and Blood Bank Equipment's, Quality Control & Documentation and Apheresis & Recent Advances; 4th Year – One year Internship.

Also as **per the UGC guidelines, during the study period an Allied Health Science Student will be studying Two Ability Enhancement compulsory courses, four Skill enhancement courses, two Generic Elective Courses and two Discipline Elective Courses.** Thus the B.Sc Blood Bank Technology (BBT) program consists of following Electives courses, namely **Ability Enhancement compulsory course (AECC) consisting** of English and Environmental studies, **Skill enhancement courses namely** Culinary Skills for optimal nutrition, Enhancing soft skill & personality, Basics of Yoga & Practice, Speaking effectively, Good Clinical Laboratory practice, Computer Applications, Library and E-resource and Public Health and Hygiene, **Generic Elective** Basics of Hospital Administration, Counseling and Guidance, Lifestyle Disorders, Basic Psychology, Sociology and Entrepreneurship essentials, **Discipline Elective Courses namely** Biomedical Waste Management, Palliative care, Biochemistry & molecular biology, Pharmacology. Each course has its well defined course outcome mentioned in individual course book.

Mapping and analysis of Cs, POs and PEOs

The process of attainment of Cs, POs and PEOs starts from writing appropriate COs for each course in the three year plus one year internship degree program. As Undergraduate Allied Health Science program is Non-regulatory, COs and POs are defined by SBV norms. Based on this, course outcomes are refined by the respective faculty members of the course using action verbs of learning levels as suggested by Bloom Taxonomy. Then, a correlation is established between Cs and POs and Cs and PEOs on the scale of 0 to 3 ('0'being no correlation, 1 being the low correlation, 2 being medium correlation and 3 being high correlation) based on their perception. The average score is calculated and is correlated with the courses as a whole not individually. The core paper & Elective course 33x5 mapping matrix of COs-PEOs **(Table.1)** and core paper & Elective course 33 x14 mapping matrix of Cs-POs **(Table.2)** is prepared at the institute level in this regard for all courses in the program. Radar graph was plotted to find out the level of correlation between PEO-Cs **(Fig.1)** and PO-Cs **(Fig.2).**

Table 1. CO-PEO Mapping matrix

S.NO	COURSE	PEO1	PEO2	PEO3	PEO4	PEO5
1.	Anatomy(AN)	3	2	1	3	3
2.	Physiology(PHY)	2	3	2	3	3
3.	Biochemistry(BIO)	3	2	3	3	3
4.	Pathology(PAT)	3	3	3	3	3
5.	Microbiology(MIC)	3	3	3	3	3
6.	English(ENG)	2	3	2	2	2
7.	Culinary Skills for optimal nutrition(NUTRI)	3	2	2	2	3
8.	Enhancing soft skill & personality(ESSP)	2	2	1	3	2
9.	Basics of Yoga & Practice	3	2	2	3	3
10.	Speaking effectively	3	3	2	3	2
11.	Basics of Hospital Administration	3	2	2	2	3

	(HOSP)					
12.	Counseling and Guidance(COUNS)	2	2	1	3	2
13.	Lifestyle Disorders (LD)	3	2	2	3	3
14.	Introduction to Blood Banking and Blood Banking Organization (BBO)	3	2	2	3	3
15.	Blood Donation & Donor Management (BDDM)	3	2	2	3	3
16.	Basic –IH (Immunohematology) & Transfusion Transmitted Infection-Serology Basic Principles of Red Cell Immuno Hematology (IHT)	3	2	2	3	3
17.	Basic Hematology Blood Components (BHBC)	3	1	2	3	3
18.	Environmental studies	2	3	2	3	3
19.	Good Clinical Laboratory practice	3	3	3	2	3
20.	Computer Applications	3	2	1	3	2
21.	Library and E-resource	3	2	2	3	2
22.	Public Health and Hygiene	2	2	3	2	3
23.	Basic Psychology	3	2	2	3	3
24.	Sociology	2	3	3	3	2
25.	Entrepreneurship essentials	3	2	2	3	3
26.	Advanced Immunohematology & Immunology (AIHI)	3	1	1	2	3
27.	Transfusion Therapy and Blood Bank Equipments (TTBBE)	3	1	2	2	3
28.	Quality Control & Documentation (QCD)	3	2	2	3	3
29.	Apheresis & Recent Advances (ARA)	3	3	2	2	2
30.	Biomedical Waste Management	3	3	2	3	3
31.	Palliative care	3	2	3	2	2
32.	Biochemistry & Molecular Biology	3	3	2	3	3
33.	Pharmacology	3	2	2	3	3
AVERAGE SCORE		**2.78**	**2.24**	**2.06**	**2.72**	**2.72**

CO-PEO Mapping

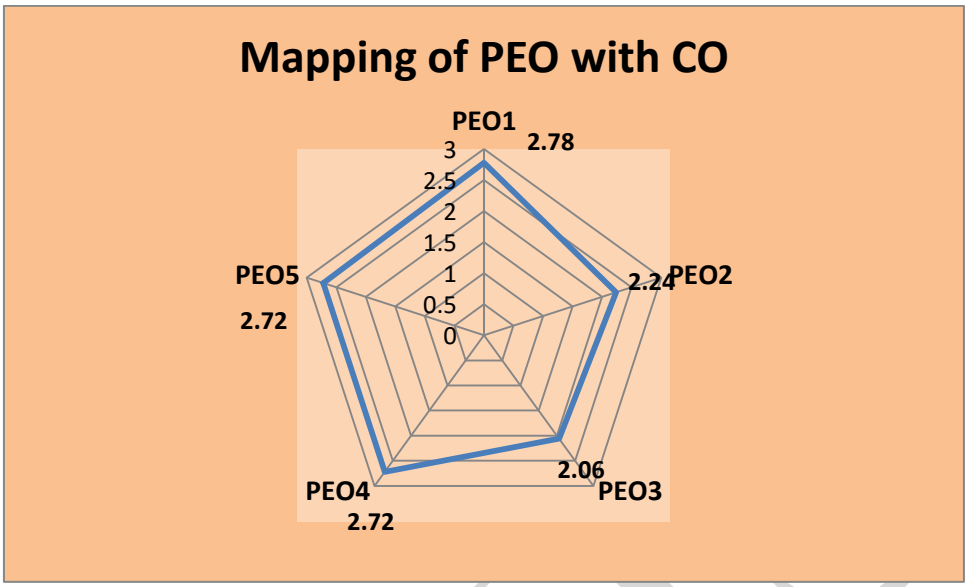

Figure 1. Mapping of Program educational objectives& course
(0 - no correlation; 1 - Low correlation; 2 - Medium correlation ; 3 - High correlation)

Table 2. Cs-PO Mapping matrix

S. NO	COURSE	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	P0 12	P0 13	PO 14
1.	Anatomy(AN)	2	2	3	2	1	0	2	1	1	2	2	1	2	1
2.	Physiology(PHY)	3	2	3	3	2	2	3	3	2	2	2	3	2	2
3.	Biochemistry(BIO)	3	2	2	3	2	1	2	1	1	2	2	3	2	2
4.	Pathology(PAT)	3	3	2	3	3	3	3	3	3	3	3	2	3	2
5.	Microbiology(MIC)	3	3	2	3	2	1	2	3	2	2	2	2	2	1
6.	English(ENG)	2	2	1	1	0	1	0	0	0	0	0	1	0	1
7.	Culinary Skills for optimal nutrition(NUTRI)	2	2	1	0	0	3	0	1	2	0	1	1	0	3
8.	Enhancing soft skill & personality(ESSP)	2	2	2	2	1	0	2	1	2	2	2	3	0	3
9.	Basics of Yoga & Practice	3	2	1	1	0	1	0	0	2	1	2	2	0	3
10.	Speaking effectively	2	2	1	2	0	3	2	1	2	2	1	1	0	2
11.	Basics of Hospital Administration (HOSP)	3	2	2	2	1	0	2	1	2	2	2	3	1	3
12.	Counseling and Guidance(COUNS)	3	2	2	2	0	1	1	2	2	1	2	2	1	3

13.	Lifestyle Disorders (LD)	3	2	2	1	2	3	0	1	2	0	1	1	1	3
14.	Introduction to Blood Banking and Blood Banking Organization (BBO)	3	3	2	2	2	3	3	3	3	3	2	3	3	1
15.	Blood Donation & Donor Management (BDDM)	3	3	3	3	3	3	3	3	3	3	3	2	3	1
16.	Basic –IH (Immunohematology) & Transfusion Transmitted Infection- Serology Basic Principles of Red Cell Immuno Hematology (IHT)	3	3	2	3	3	2	3	3	3	3	3	3	3	1
17.	Basic Hematology Blood Components (BHBC)	3	3	3	3	3	2	3	3	3	3	3	3	3	1
18.	Environmental studies	3	2	1	1	2	3	1	1	2	2	1	3	0	1
19.	Good Clinical Laboratory practice	2	2	3	2	1	1	2	1	3	2	2	3	2	1
20.	Computer Applications	3	3	2	2	3	3	3	3	1	3	2	3	1	1
21.	Library and E-resource	3	2	3	2	2	3	2	1	2	0	1	1	1	1
22.	Public Health and Hygiene	3	2	1	1	2	3	1	1	2	2	1	3	0	3
23.	Basic Psychology	2	2	3	2	1	1	2	1	3	2	2	3	1	3
24.	Sociology	3	2	2	2	3	3	3	3	1	3	2	3	1	3
25.	Entrepreneurship essentials	3	2	3	2	2	3	2	1	2	2	1	3	0	2
26.	Advanced Immunohematology & Immunology (AIHI)	3	3	2	3	3	2	3	3	3	3	3	3	2	1
27.	Transfusion Therapy and Blood Bank Equipments (TTBBE)	3	3	3	3	3	3	3	3	3	3	3	3	2	1
28.	Quality Control & Documentation (QCD)	3	2	1	1	2	3	3	3	3	3	3	3	2	1
29.	Apheresis & Recent Advances (ARA)	3	3	2	2	3	3	3	3	2	2	3	3	3	1
30.	Biomedical Waste Management	3	2	1	2	2	3	2	1	2	0	1	1	1	1
31.	Palliative care	3	2	1	2	2	3	1	2	2	2	1	3	1	2
32.	Biochemistry & Molecular Biology	3	2	3	2	1	2	2	1	3	2	2	3	2	1
33.	Pharmacology	3	2	2	2	3	2	3	3	1	3	2	3	1	1
	AVERAGE SCORE	**2.78**	**2.30**	**2.03**	**2.03**	**1.81**	**2.12**	**2.03**	**1.84**	**2.12**	**1.96**	**1.90**	**2.42**	**2**	**2.39**

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation ;3 - High correlation).

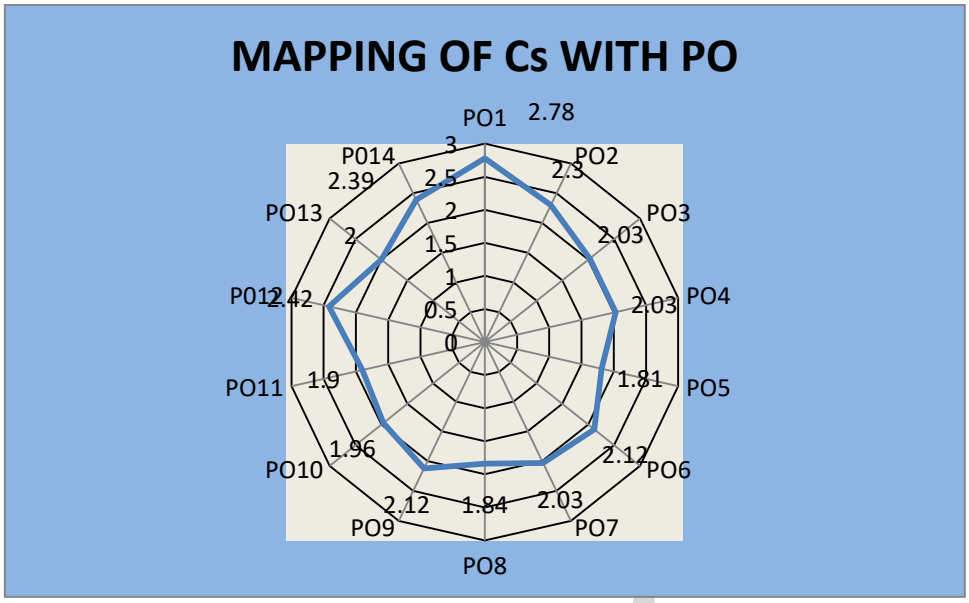

Figure 3. Mapping of Program outcome & course

0 - No correlation; 1 - Low correlation; 2 - Medium correlation ;3 - High correlation)

Analysis of COs, POs and PEOs:

On analyzing, the average score of individual program outcome ranges from 2.06 to 2.78. It shows, there exist a strong correlation of all Cos with that of PO1, PO2 PO6, PO9 & PO12, whereas medium correlation between Cos and PO3, PO4, PO7, PO5, PO8, PO10 & PO11. Similarly, on analyzing, the average score of individual program educational objectives ranges from 2.06 to 2.78. It shows, there exist a strong correlation of all Cs with that of PEO1 & PEO5, whereas medium correlation between Cs and PEO2, PEO3 & PEO4.

UNDER GRADUATE

14.B.Sc Critical Care Technology

Program Educational Objectives (PEO)

Program educational objectives for under graduate program are as follows:

- **PEO1:** A technical expert who genuinely gets involved in patient care and does multi-task responsibilities.
- **PEO 2**: Communicators possessing adequate communication skills to convey the required information in an appropriate manner in various health care settings.
- **PEO 3:** Demonstrate basic administration/management and leadership skills.
- **PEO 4:** Lifelong learner is keen on updating oneself regarding the technical advancement in the health care field and able to perform the role of a good technologist and /or, researcher and teacher.

- **PEO 5:** Technologist who understands and follows the principle of bio-ethics / ethics related to the health care system.

PROGRAMME OUTCOME

At the end of 4 years of this training session, this curriculum will make students to achieve the following objectives:

CC-PO1: Performs the duty as a critical care Technologist with leadership qualities having a good written & communication skill and also skilled at computer applications including E- library.

CC-PO2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society and preventing the spread of infectious diseases.

CC-PO3: Understanding the structure and functions of different organs in normal human body and acquire knowledge of the fundamentals of pathology & pathophysiology in disease states.

CC-PO4: Ability to perform urinalysis, Serology, hematology, cytology, blood banking, biochemical, microbiological parameters and drug reactions.

CC-PO5: To make students participate in palliative care and also aware of basic radiology principles.

CC-PO6: To make students apply basic science knowledge gained through this curriculum in their critical care technology practice.

CC-PO7: To make students assist in ICU emergency procedures including cardiopulmonary resuscitation and also in participation of trauma evaluation &management.

CC-PO8: To make students aware of the ethical principles pertinent to critically ill patients.

CC-PO9: To make students participate in ICU administration, organization and quality improvement.

CC-PO10: To make students understand the pharmacological principles and pharmacovigilance pertaining to the drugs used in critical care.

CC-PO11: To build efficient technologist in handling ICU Equipment's and practice.

CC-PO12: To identify various life style disorders and with due counseling& guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy.

Course (Cs)

B.Sc Critical Care Technology (CC) program under the CHOICE BASED CREDIT SYSTEM consists of following core courses namely: 1stYear B.Sc CC consists of Anatomy, Physiology, Biochemistry, Pathology, and Microbiology; 2ndYear B.Sc CC consists of, Clinical Pharmacology, Applied Anatomy & Applied Physiology, ICU Monitoring I (Basic) & Pathology & Pathophysiology; 3rdYear B.Sc CC consist of ICU Monitoring- II (Advanced) & Equipment Maintenance, Basic Physics & Biomedical engineering, ICU Therapy & ICU Administration, Logistics, Ethics & Statistics; 4th Year – One year Internship.

Also a**s per the UGC guidelines, during the study period an Allied Health Science Student will be studying Two Ability Enhancement compulsory courses, four Skill enhancement courses, two Generic Elective Courses and two Discipline Elective Courses.** Thus the B.Sc Critical Care Technology (CC) program consists of following Electives courses, namely **Ability Enhancement compulsory course (AECC) consisting** of English and Environmental studies, **Skill enhancement courses namely** Culinary Skills for optimal nutrition, Enhancing soft skill & personality, Basics of Yoga & Practice, Speaking effectively, Good Clinical Laboratory practice, Computer Applications, Library and E-resource and Public Health and Hygiene, **Generic Elective Course** namely Basics of Hospital Administration, Counseling and Guidance, Lifestyle Disorders, Basic Psychology, Sociology and Entrepreneurship essentials, **Discipline Elective Courses namely** Basic Radiation Biology, Palliative care, Trauma Evaluation & Management, Hospital infection control & Pharmacovigilance.. Each course has its well defined course outcome mentioned in individual course book.

Mapping and analysis of Cs, POs and PEOs

The process of attainment of Cs, POs and PEOs starts from writing appropriate COs for each course in the three year plus one year internship degree program. As Undergraduate Allied Health Science program is Non-regulatory, COs and POs are defined by SBV norms. Based on this, course outcomes are refined by the respective faculty members of the course using action verbs of learning levels as suggested by Bloom Taxonomy. Then, a correlation is established between Cs and POs and Cs and PEOs on the scale of 0 to 3 (‘0‘being no correlation, 1 being the low correlation, 2 being medium correlation and 3 being high correlation) based on their perception. The average score is calculated and is correlated with the courses as a whole not individually. The core paper & Elective course 34x5 mapping matrix of COs-PEOs **(Table.1)** and core paper & Elective course 34 x12 mapping matrix of Cs-POs **(Table.2)** is prepared at the institute level in this regard for all courses in the program. Radar graph was plotted to find out the level of correlation between PEO-Cs **(Fig.1)** and PO-Cs**(Fig.2).**

Table 1. CO-PEO Mapping matrix

S.NO	COURSE	PEO1	PEO2	PEO3	PEO4	PEO5
1.	Anatomy(AN)	3	2	2	2	3
2.	Physiology(PHY)	2	3	2	3	3
3.	Biochemistry(BIO)	3	2	3	3	3
4.	Pathology(PAT)	3	3	3	3	3
5.	Microbiology(MIC)	3	3	3	3	3
6.	English (ENG)	3	3	2	3	2
7.	Culinary Skills for optimal nutrition(NUTRI)	3	2	2	2	3
8.	Enhancing soft skill & personality(ESSP)	2	2	2	3	2
9.	Basics of Yoga & Practice	3	2	2	3	3
10.	Speaking effectively	2	3	2	3	2
11.	Basics of Hospital Administration (HOSP)	3	2	2	2	3
12.	Counseling and Guidance(COUNS)	2	3	1	3	2
13.	Lifestyle Disorders (LD)	3	2	2	3	

14.	Clinical Pharmacology	3	3	2	3	3
15.	Applied Anatomy & Applied Physiology	3	3	3	3	2
16.	ICU Monitoring I (Basic)	3	3	2	3	3
17.	Pathology & Pathophysiology	2	2	2	3	3
18.	Environmental studies	2	3	2	3	3
19.	Good Clinical Laboratory practice	3	3	3	2	3
20.	Computer Applications	3	2	1	3	2
21.	Library and E-resource	3	2	2	3	2
22.	Public Health and Hygiene	2	2	3	2	3
23.	Basic Psychology	3	2	2	3	3
24.	Sociology	2	3	3	3	2
25.	Entrepreneurship essentials	3	2	2	3	3
26.	ICU Monitoring- II (Advanced) & Equipment Maintenance	3	3	3	3	3
27.	Basic Physics & Biomedical engineering	3	2	2	2	3
28.	ICU Therapy	2	2	2	3	3
29.	ICU Administration, Logistics, Ethics & Statistics	3	3	3	3	3
30.	Basic Radiation Biology	3	3	3	3	3
31.	Palliative care	3	3	2	3	3
32.	Trauma Evaluation & Management	3	2	3	2	2
33.	Pharmacovigilance	3	3	2	3	3
34.	Hospital Infection control	3	2	2	3	3
Average		**2.73**	**2.5**	**2.26**	**2.79**	**2.73**

CO-PEO Mapping

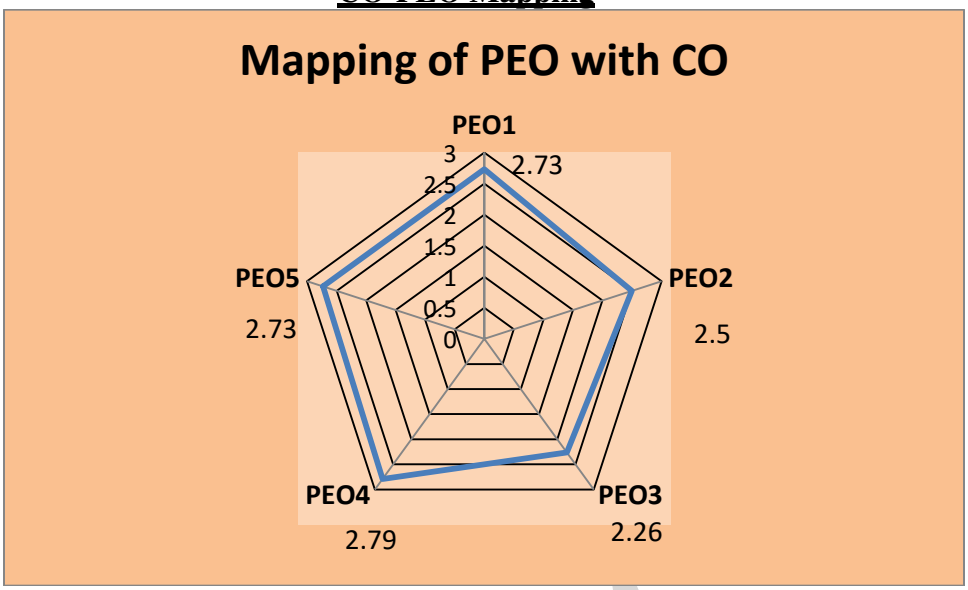

Figure 1. Mapping of Program educational objectives& course
(0 - no correlation; 1 - Low correlation; 2 - Medium correlation ; 3 - High correlation)

Table 2. Cs-PO Mapping matrix

S.NO	COURSE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	P012
1.	Anatomy(AN)	3	2	3	2	2	1	1	2	1	2	2	3
2.	Physiology(PHY)	3	3	3	3	2	2	3	2	3	1	2	2
3.	Biochemistry(BIO)	3	2	2	3	3	3	3	2	2	3	2	2
4.	Pathology(PAT)	3	3	2	3	3	3	2	3	2	3	2	2
5.	Microbiology(MIC)	3	3	2	3	3	3	2	3	2	3	2	3
6.	English(ENG)	2	2	1	2	0	1	0	1	2	1	2	2
7.	Culinary Skills for optimal nutrition(NUTRI)	2	2	1	0	1	3	0	2	2	0	1	2
8.	Enhancing soft skill & personality(ESSP)	2	3	2	2	2	0	2	1	2	2	2	3
9.	Basics of Yoga & Practice	3	2	1	2	1	2	0	3	2	2	3	2
10.	Speaking effectively	2	2	1	2	0	3	2	1	2	2	1	2
11.	Basics of Hospital Administration (HOSP)	3	3	2	2	2	1	2	3	2	2	2	3
12.	Counseling and Guidance(COUNS)	3	2	2	2	0	1	1	2	2	2	2	3
13.	Lifestyle Disorders (LD)	3	2	2	1	2	3	0	1	2	1	1	3
14.	Clinical Pharmacology	2	2	2	2	1	0	2	1	2	2	2	3

15.	Applied Anatomy & Applied Physiology	3	3	2	3	3	3	3	3	1	3	2	3
16.	ICU Monitoring I (Basic)	3	2	2	3	3	3	2	3	3	2	3	3
17.	Pathology & Pathophysiology	3	2	2	3	3	3	2	3	3	2	3	3
18.	Environmental studies	3	2	1	1	2	3	1	1	2	2	1	3
19.	Good Clinical Laboratory practice	2	2	3	2	1	2	2	1	3	2	2	3
20.	Computer Applications	3	3	2	2	3	3	3	3	1	3	2	3
21.	Library and E-resource	3	2	3	2	2	3	2	1	2	0	1	1
22.	Public Health and Hygiene	3	2	1	1	2	3	1	1	2	2	1	3
23.	Basic Psychology	2	2	3	2	1	2	2	1	3	2	2	3
24.	Sociology	3	2	2	2	3	3	3	3	1	3	2	3
25.	Entrepreneurship essentials	3	2	3	2	2	3	2	1	2	2	1	3
26.	ICU Monitoring- II (Advanced) & Equipment Maintenance	3	2	3	2	2	3	1	2	3	2	2	3
27.	Basic Physics & Biomedical engineering	3	2	3	2	2	3	2	3	3	2	3	3
28.	ICU Therapy	3	3	2	2	3	3	3	3	2	3	2	3
29.	ICU Administration, Logistics, Ethics & Statistics	3	2	3	2	2	3	2	1	2	0	1	1
30.	Basic Radiation Biology	3	2	2	2	2	3	1	2	2	2	1	3
31.	Palliative care	3	2	3	2	1	2	2	1	3	2	2	3
32.	Trauma Evaluation & Management	3	2	2	2	3	2	3	3	1	3	2	3
33.	Pharmacovigilance	3	2	2	2	2	3	2	1	2	1	1	2
34.	Hospital Infection control	3	3	3	3	2	3	2	2	2	2	2	3
AVERAGE SCORE		**2.67**	**2.17**	**2.08**	**2.17**	**2.08**	**2.29**	**2.02**	**2.11**	**2.38**	**1.91**	**2.05**	**2.55**

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation ;3 - High correlation).

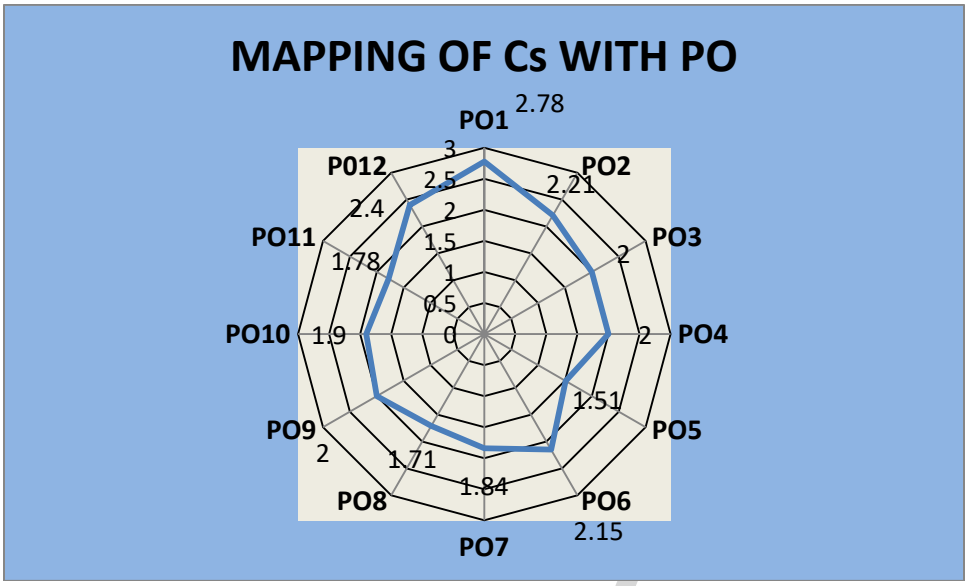

Figure 2. Mapping of Program outcome &course

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation)

Analysis of Cs, POs and PEOs:

On analyzing, the average score of individual program outcome ranges from 1.91 to 2.67. It shows, there exist a strong correlation of all Cs with that of PO1 & PO12, whereas medium correlation between Cs and PO6 & PO9. Similarly, on analyzing, the average score of individual program educational objectives ranges from 2.26 to 2.79. It shows, there exist a strong correlation of all Cs with that of PEO1, PEO4 & PEO5, whereas medium correlation between Cs and PEO2&PEO3.

UNDER GRADUATE

15.B.Sc. Respiratory Therapy

Program Educational Objectives (PEO)

Program educational objectives for under graduate program are as follows:

- **PEO 1:** A technical expert who genuinely gets involved in patient care and does multi-task responsibilities.
- **PEO 2:** Communicators possessing adequate communication skills to convey the required information in an appropriate manner in various health care settings.
- **PEO 3:** Demonstrate basic administration/management and leadership skills.
- **PEO 4:** Lifelong learner is keen on updating oneself regarding the technical advancement in the health care field and able to perform the role of a good technologist and /or, researcher and teacher.

- **PEO 5:** Technologist who understands and follows the principle of bio-ethics / ethics related to the health care system

Program outcome (PO)

At the end of the 3 year of training under graduates of Respiratory Therapy Technologist Should be able to

RT-PO 1: Performs the duty as a Respiratory Therapy mastering computer application with good written and communication ability and also skilled at computer applications including E- library.

RT-PO 2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases.

RT-PO 3: Understanding the structure and functions of Lung anatomy

RT-PO 4: To learn the general procedures and interpretation of Respiratory therapy which includes PFT, Mechanical Ventilation, NIV and ABG.

RT-PO 5: To make students assist during administration and monitoring of cardiopulmonary resuscitation and Bronchoscopy

RT-PO 6: To make students understand the pharmacological principles pertaining to the drugs used in clinical practice such as aerosol therapy etc.

RT-PO 7: To make students participate and coordinate emergency resuscitative measures in acute surgical situations including trauma and Chest Physiotherapy.

RT-PO8: To make students in assisting super specialty surgeries like cardiothoracic vascular procedures like ICD and tracheostomy.

RT-PO9: To make students in providing primary care services are including performing examinations, differential diagnosis and routine monitoring in various outpatient departments.

RT-PO 10: To identify various life style disorders and with due counselling & guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behavior healthy.

Course (Cs)

B.Sc. Respiratory Therapy (RT) program under the CHOICE BASED CREDIT SYSTEM consists of following core courses namely: 1stYear B.Sc RT consists of Anatomy, Physiology, Biochemistry, Pathology, and Microbiology ; 2ndYear B.Sc RT consists of, Computer Application, Environmental Sciences, Respiratory Diseases , Cardiovascular Disease, Diagnostic Techniques in cardio respiratory disease, Clinical Pharmacology; 3rdYear B.Sc RT consist of Respiratory Therapy Techniques –I, Respiratory Therapy Techniques –II, Life Support System, Cardio- Pulmonary Rehabilitation; 4th Year – One year Internship.

Also a**s per the UGC guidelines, during the study period an Allied Health Science Student will be studying Two Ability Enhancement compulsory courses, four Skill enhancement courses, two Generic Elective Courses and two Discipline Elective Courses.** Thus the B.Sc Blood Bank Technology (BBT) program consists of following Electives courses, namely **Ability Enhancement compulsory course (AECC) consisting** of English and Environmental studies, **Skill enhancement courses namely** Culinary Skills for optimal nutrition, Enhancing soft skill & personality, Basics of Yoga & Practice, Speaking effectively, Good Clinical Laboratory practice, Computer Applications, Library and E-resource and Public Health and Hygiene, **Generic Elective Course** namely Basics of Hospital Administration, Counseling and Guidance, Lifestyle Disorders,

Basic Psychology, Sociology and Entrepreneurship essentials, **Discipline Elective Courses namely** Equipment In Respiratory Care, Basic Radiation Biology, Palliative Care, BLS & ACLS, Air Borne Infection Control. Each course has its well defined course outcome mentioned in individual course book.

Mapping and analysis of Cs, POs and PEOs

The process of attainment of Cs, POs and PEOs starts from writing appropriate COs for each course in the three year plus one year internship degree program. As Undergraduate Allied Health Science program is Non-regulatory, COs and POs are defined by SBV norms. Based on this, course outcomes are refined by the respective faculty members of the course using action verbs of learning levels as suggested by Bloom Taxonomy. Then, a correlation is established between Cs and POs and Cs and PEOs on the scale of 0 to 3 ('0'being no correlation, 1 being the low correlation, 2 being medium correlation and 3 being high correlation) based on their perception. The average score is calculated and is correlated with the courses as a whole not individually. The core paper & Elective course 34 x5 mapping matrix of COs-PEOs **(Table.1)** and core paper & Elective course 34 x10 mapping matrix of Cs-POs **(Table.2)** is prepared at the institute level in this regard for all courses in the program. Radar graph was plotted to find out the level of correlation between PEO-Cs **(Fig.1)** and PO-Cs **(Fig.2).**

Table 1. CO-PEO Mapping matrix

S.NO	COURSE	PEO1	PEO2	PEO3	PEO4	PEO5
1.	Anatomy(AN)	3	2	1	3	3
2.	Physiology(PHY)	2	3	2	3	3
3.	Biochemistry(BIO)	3	2	3	3	3
4.	Pathology(PAT)	3	3	3	3	3
5.	Microbiology(MIC)	3	3	3	3	3
6.	English(ENG)	2	3	2	2	2
7.	Culinary Skills for optimal nutrition (NUTRI)	3	2	2	2	3
8.	Enhancing soft skill & personality (ESSP)	2	2	1	3	2
9.	Basics of Yoga & Practice	3	2	2	3	3
10.	Speaking effectively	3	3	2	3	2
11.	Basics of Hospital Administration (HOSP)	3	2	2	2	3
12.	Counseling and Guidance (COUNS)	2	2	1	3	2
13.	Lifestyle Disorders (LD)	3	2	2	3	3
14.	Respiratory Diseases	3	2	2	2	3
15.	Cardiovascular Disease	3	2	2	3	3
16.	Diagnostic Techniques in cardio respiratory disease	3	2	2	3	3
17.	Clinical Pharmacology	3	2	2	3	3
18.	Environmental studies	2	3	2	3	3
19.	Good Clinical Laboratory practice	3	3	3	2	3
20.	Computer Applications	3	2	1	3	2

21.	Library and E-resource	3	2	2	3	2
22.	Public Health and Hygiene	2	2	3	2	3
23.	Basic Psychology	3	2	2	3	3
24.	Sociology	2	3	3	3	2
25.	Entrepreneurship essentials	3	2	2	3	3
26.	Respiratory Therapy Techniques –I	3	2	2	3	3
27.	Respiratory Therapy Techniques –II	3	2	2	3	3
28.	Life Support System	3	2	3	3	3
29.	Cardio- Pulmonary Rehabilitation	3	3	2	2	2
30.	Equipment In Respiratory Care	3	3	2	3	3
31.	Palliative care	3	2	3	2	2
32.	Basic Radiation Biology	3	3	2	3	3
33.	BLS & ACLS	3	2	2	3	3
34.	Air Borne Infection Control	2	3	2	3	2
AVERAGE SCORE		**2.76**	**2.35**	**2.11**	**2.76**	**2.70**

CO-PEO Mapping

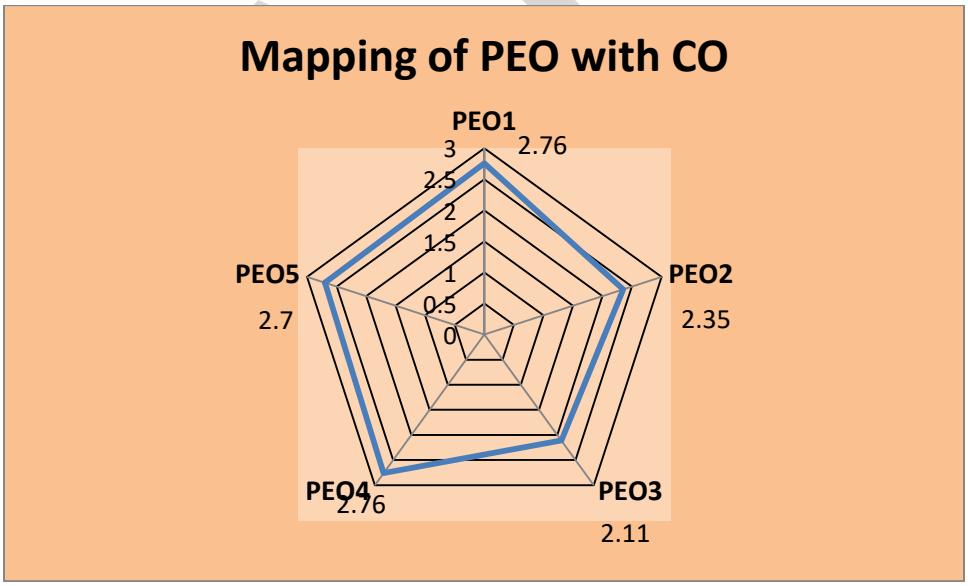

Figure 2. Mapping of Program educational objectives & course
(0 - no correlation; 1 - Low correlation; 2 - Medium correlation ;3 - High correlation)

Table 2. Cs-PO Mapping matrix

S.NO	COURSE	PO1	PO2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
1.	Anatomy(AN)	2	2	3	2	1	1	2	2	1	0
2.	Physiology(PHY)	2	2	3	3	2	2	3	2	2	2
3.	Biochemistry(BIO)	2	2	2	3	2	1	2	1	1	2
4.	Pathology(PAT)	3	3	2	3	3	2	2	2	1	2
5.	Microbiology(MIC)	3	3	2	3	2	1	2	2	1	2
6.	English(ENG)	2	2	1	1	0	1	1	1	2	2
7.	Culinary Skills for optimal nutrition(NUTRI)	2	2	1	0	0	3	0	1	2	3
8.	Enhancing soft skill & personality(ESSP)	2	2	2	2	1	0	2	2	2	2
9.	Basics of Yoga & Practice	0	2	1	1	0	1	0	1	0	3
10.	Speaking effectively	3	2	1	2	0	3	2	1	2	2
11.	Basics of Hospital Administration (HOSP)	3	3	2	2	1	0	2	2	2	3
12.	Counseling and Guidance(COUNS)	3	3	2	2	0	1	1	2	2	3
13.	Lifestyle Disorders (LD)	2	2	2	1	2	3	1	2	2	3
14.	Respiratory Diseases	2	2	2	2	2	3	3	3	3	2
15.	Cardiovascular Disease	2	2	3	3	3	3	3	3	3	2
16.	Diagnostic Techniques in cardio respiratory disease	2	3	2	3	3	2	3	3	3	2
17.	Clinical Pharmacology	1	2	2	2	3	3	3	3	3	2
18.	Environmental studies	1	3	1	1	2	3	1	1	2	2
19.	Good Clinical Laboratory practice	2	3	3	2	1	2	3	2	3	2
20.	Computer Applications	3	3	2	2	3	2	2	1	3	3
21.	Library and E-resource	3	2	3	2	2	1	2	1	2	0
22.	Public Health and Hygiene	3	3	1	1	2	3	2	1	2	3
23.	Basic Psychology	2	2	3	2	1	3	3	1	2	3
24.	Sociology	3	3	2	2	3	3	3	2	1	3
25.	Entrepreneurship essentials	3	3	3	2	2	2	2	1	2	2
26.	Respiratory Therapy Techniques –I	3	3	2	3	3	2	3	3	3	2
27.	Respiratory Therapy Techniques –II	3	3	2	3	3	3	3	3	3	2
28.	Life Support System	3	2	1	1	2	2	3	3	3	3

29.	Cardio- Pulmonary Rehabilitation	3	3	2	2	3	3	3	3	2	2
30.	Equipment In Respiratory Care	3	3	1	2	2	3	2	1	2	0
31.	Palliative care	3	2	1	2	2	3	1	2	2	3
32.	Basic Radiation Biology	3	2	3	2	1	2	2	1	2	2
33.	BLS & ACLS	3	2	2	3	3	2	3	3	2	1
34.	Air Borne Infection Control	1	3	1	3	1	1	2	2	1	1
	AVERAGE SCORE	**2.38**	**2.47**	**1.94**	**2.05**	**1.79**	**2.05**	**2.11**	**1.88**	**2.02**	**2.08**

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation ;3 - High correlation).

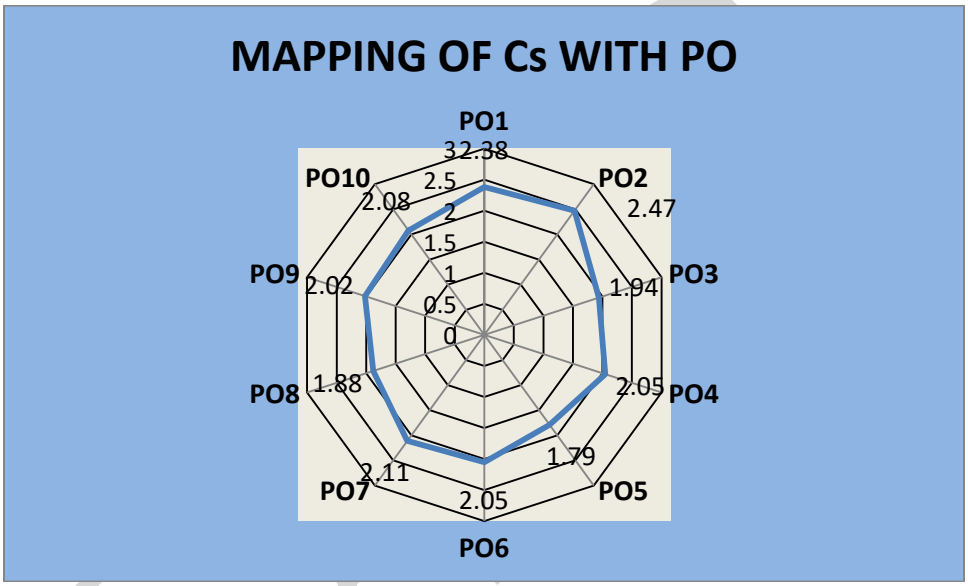

Figure 2. Mapping of Program outcome &course

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation)

Analysis of Cs, POs and PEOs:

On analyzing, the average score of individual program outcome ranges from 1.79 to 2.47. It shows, there exist a strong correlation of all Cs with that of PO1 & PO2, whereas medium correlation between Cs and PO7 & PO10. Similarly, on analyzing, the average score of individual program educational objectives ranges from 2.35 to 2.76. It shows, there exist a strong correlation of all Cs with that of PEO1 & PEO4, whereas medium correlation between Cs and PEO2, PEO3 & PEO5.

UNDER GRADUATE

16. B.Sc Accident and Emergency Care Technology

Program Educational Objectives (PEO)

Program educational objectives for under graduate program are as follows:

- **PEO1:** A technical expert who genuinely gets involved in patient care and does multi-task responsibilities.
- **PEO 2**: Communicators possessing adequate communication skills to convey the required information in an appropriate manner in various health care settings.
- **PEO 3:** Demonstrate basic administration/management and leadership skills.
- **PEO 4:** Lifelong learner is keen on updating oneself regarding the technical advancement in the health care field and able to perform the role of a good technologist and /or, researcher and teacher.
- **PEO 5:** Technologist who understands and follows the principle of bio-ethics / ethics related to the health care system.

Program outcome (PO)

At the end of the 4 year of training B.Sc AECT students should be able to

AECTPO1: Performs the duty as a Medical Technologist with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library.

AECTPO2: To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases.

AECTPO3: Understanding the structure and functions of different organs in normal human body.

AECTPO4: Recognize a patient requiring urgent or emergent care and initiate the first Aid and stabilising the patient and to know the normal range of the individual biochemical and pathological tests

AECTPO5: To gain knowledge about the various chemical process in the body and laboratory investigations to diagnose the disease medical condition.

AECTPO6: Learns the pathophysiology of the disease, its aetiology, causes, clinical features, management and progression

AECTPO7: Able to identify critical problems, complications, and immediately report to the doctor and Able to assess the airway and aware of basic airway management skills and techniques.

AECTPO8: Develop and carry out well-organized patient management plans that support safe, effective, and efficient care for the patients

AECTPO9: Respond to emergency situations by providing CPR and assist in the provision of basic life support and advanced cardiac life support.

AECTPO10: Able to administer drugs by various routes (subcutaneous, intravenous, intramuscular, intraperitoneal) and able to manage critically ill patient by administrating drugs.

AECTPO 11: Demonstrate knowledge about the healthcare sector, diagnostic services and Plays a vital role in Hospital infection control. Able to maintain asepsis in the working area.

AECTPO12: To identify various life style disorders and with due counselling & guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behaviour healthy.

Course (Cs)

B.Sc Accident and Emergency care Technology (AECT) program under the CHOICE BASED CREDIT SYSTEM consists of following core courses namely: 1stYear B.Sc AECT consists of Anatomy, Physiology, Biochemistry, Pathology, and Microbiology; 2ndYear B.Sc AECT consists of Emergency Medicine & Medical Services-I, Patient Examination & Nursing, Emergency Medicine & Medical Services-II & Emergency Pharmacology; 3rdYear B.Sc AECT consist of Emergency Medicine & Medical Services-III, Emergency Surgery & Emergency Special Services & Clinical Procedures & Instruments in emergency services; 4th Year – One year Internship.

Also a**s per the UGC guidelines, during the study period an Allied Health Science Student will be studying Two Ability Enhancement compulsory courses, four Skill enhancement courses, two Generic Elective Courses and two Discipline Elective Courses.** Thus the B.Sc Accident and Emergency care Technology (AECT) program consists of following Electives courses, namely **Ability Enhancement compulsory course (AECC) consisting** of English and Environmental studies, **Skill enhancement courses namely** Culinary Skills for optimal nutrition, Enhancing soft skill & personality, Basics of Yoga & Practice, Speaking effectively, Good Clinical Laboratory practice, Computer Applications, Library and E-resource and Public Health and Hygiene, **Generic Elective Course** namely Basics of Hospital Administration, Counseling and Guidance, Lifestyle Disorders, Basic Psychology, Sociology and Entrepreneurship essentials, **Discipline Elective Courses namely** Biomedical Waste Management, Cell culture Technologies, Biochemistry & Molecular Biology and Pharmacology. Each course has its well defined course outcome mentioned in individual course book.

Mapping and analysis of Cs, POs and PEOs

The process of attainment of Cs, POs and PEOs starts from writing appropriate COs for each course in the three year plus one year internship degree program. As Undergraduate Allied Health Science program is Non-regulatory, COs and POs are defined by SBV norms. Based on this, course outcomes are refined by the respective faculty members of the course using action verbs of learning levels as suggested by Bloom Taxonomy. Then, a correlation is established between Cs and POs and Cs and PEOs on the scale of 0 to 3 (‘0‘being no correlation, 1 being the low correlation, 2 being medium correlation and 3 being high correlation) based on their perception. The average score is calculated and is correlated with the courses as a whole not individually. The core paper & Elective course 32 x 5 mapping matrix of COs-PEOs **(Table.1)** and core paper & Elective course 32 x12 mapping matrix of Cs-POs **(Table.2)** is prepared at the institute level in this regard for all courses in the program. Radar graph was plotted to find out the level of correlation between PEO-Cs **(Fig.1)** and PO-Cs **(Fig.2).**

Table 1. CO-PEO Mapping matrix

S.NO	COURSE	PEO1	PEO2	PEO3	PEO4	PEO5
1.	Anatomy(AN)	3	2	1	2	3
2.	Physiology(PHY)	2	3	2	3	3
3.	Biochemistry(BIO)	3	2	3	3	2
4.	Pathology(PAT)	3	3	3	3	3
5.	Microbiology(MIC)	3	3	3	2	3
6.	English (ENG)	3	3	2	3	2
7.	Culinary Skills for optimal nutrition(NUTRI)	3	2	2	2	3
8.	Enhancing soft skill & personality(ESSP)	2	2	1	3	2
9.	Basics of Yoga & Practice	3	2	2	3	3
10.	Speaking effectively	2	3	2	3	2
11.	Basics of Hospital Administration (HOSP)	3	2	2	2	3
12.	Counseling and Guidance(COUNS)	2	2	1	3	2
13.	Lifestyle Disorders (LD)	3	2	2	2	3
14.	Clinical Pharmacology	2	3	2	2	2
15.	Patient Examination & Nursing	3	3	3	3	2
16.	Emergency Medicine & Medical Service –I	3	3	2	3	3
17.	Emergency Medicine & Medical Service –II	3	3	2	3	3
18.	Environmental studies	2	3	2	3	2
19.	Good Clinical Laboratory practice	2	3	3	2	3
20.	Computer Applications	2	2	1	3	2
21.	Library and E-resource	2	2	2	2	2
22.	Public Health and Hygiene	2	2	3	2	3
23.	Basic Psychology	3	2	2	2	3
24.	Sociology	2	3	3	3	2
25.	Entrepreneurship essentials	2	2	2	3	3

26.	Emergency Medicine & Medical Service –III	3	3	3	3	3
27.	Emergency Surgery & Emergency Special Services	3	3	3	3	3
28.	Clinical Procedures & Instruments in Emergency Services	3	3	3	3	3
29.	Basic Radiation Biology	2	3	2	3	3
30.	Palliative care	3	2	3	2	2
31.	Trauma Evaluation & Management	3	3	2	3	3
32.	Pharmacovigilance	3	2	2	2	3
Average		**2.59**	**2.53**	**2.21**	**2.62**	**2.62**

CO-PEO Mapping

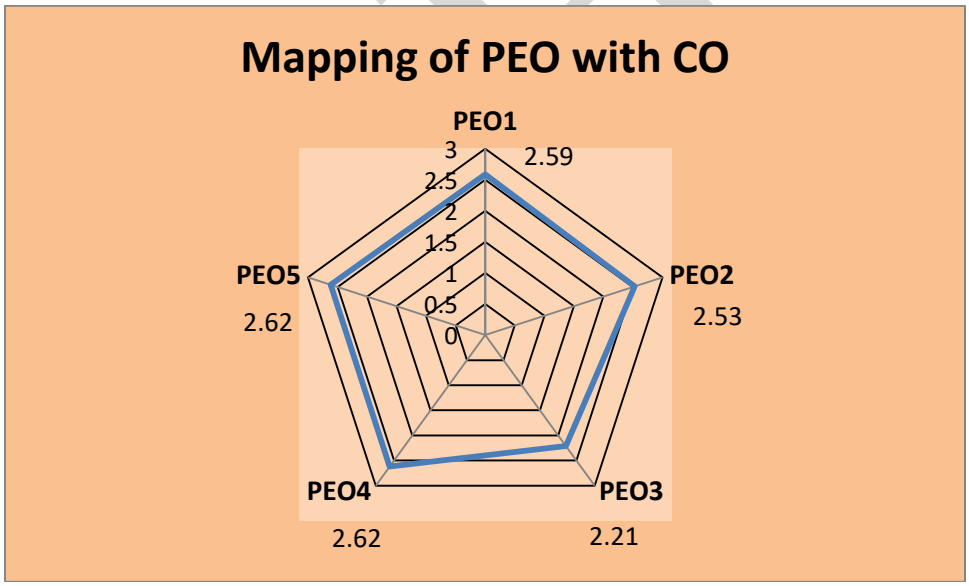

Figure 1. Mapping of Program educational objectives& course
(0 - no correlation; 1 - Low correlation; 2 - Medium correlation ; 3 - High correlation)

Table 2. Cs-PO Mapping matrix

S.NO	COURSE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	P012
1.	Anatomy(AN)	3	2	3	2	2	0	1	1	1	2	2	1
2.	Physiology(PHY)	3	3	3	3	2	0	3	2	2	1	2	2
3.	Biochemistry(BIO)	3	2	2	3	3	3	3	2	2	3	2	2
4.	Pathology(PAT)	3	3	2	3	3	3	2	3	2	3	2	2
5.	Microbiology(MIC)	3	3	2	3	3	3	2	3	2	3	2	2
6.	English(ENG)	2	2	1	1	0	1	0	0	2	1	2	2
7.	Culinary Skills for optimal nutrition(NUTRI)	2	2	1	0	0	3	0	1	2	0	1	1
8.	Enhancing soft skill & personality(ESSP)	2	2	2	2	1	0	2	1	2	2	2	3
9.	Basics of Yoga & Practice	3	2	1	1	0	1	0	0	2	1	2	2
10.	Speaking effectively	2	2	1	2	0	3	2	1	2	2	1	1
11.	Basics of Hospital Administration (HOSP)	3	2	2	2	1	0	2	1	2	2	2	3
12.	Counseling and Guidance(COUNS)	3	2	2	2	0	1	1	2	2	1	2	2
13.	Lifestyle Disorders (LD)	3	2	2	1	2	3	0	1	2	0	1	1
14.	Clinical Pharmacology	2	2	2	2	1	0	2	1	2	2	2	3
15.	Patient Examination & Nursing	3	3	2	3	3	3	3	3	1	3	2	3
16.	Emergency Medicine & Medical Service –I	3	2	3	3	3	3	3	3	3	2	3	3
17.	Emergency Medicine & Medical Service – II	3	3	2	3	3	3	3	3	1	3	2	3
18.	Environmental studies	3	2	1	1	2	3	1	1	2	2	1	3
19.	Good Clinical Laboratory practice	2	2	3	2	1	1	2	1	3	2	2	3
20.	Computer Applications	3	3	2	2	3	3	3	3	1	3	2	3

21.	Library and E-resource	3	2	3	2	2	3	2	1	2	0	1	1
22.	Public Health and Hygiene	3	2	1	1	2	3	1	1	2	2	1	3
23.	Basic Psychology	2	2	3	2	1	1	2	1	3	2	2	3
24.	Sociology	3	2	2	2	3	3	3	3	1	3	2	3
25.	Entrepreneurship essentials	3	2	3	2	2	3	2	1	2	2	1	3
26.	Emergency Medicine & Medical Service – III	3	2	1	2	2	3	1	2	3	2	2	3
27.	Emergency Surgery & Emergency Special Services	3	2	3	2	2	3	2	3	3	2	3	3
28.	Clinical Procedures & Instruments in Emergency Services	3	3	2	2	3	3	3	3	2	3	2	3
29.	Basic Radiation Biology	3	2	1	2	2	3	2	1	2	0	1	1
30.	Palliative care	3	2	1	2	2	3	1	2	2	2	1	3
31.	Trauma Evaluation & Management	3	2	3	2	1	2	2	1	3	2	2	3
32.	Pharmacovigilance	3	2	2	2	3	2	3	3	1	3	2	3
AVERAGE SCORE		**2.78**	**2.21**	**2**	**2**	**1.51**	**2.15**	**1.84**	**1.71**	**2**	**1.9**	**1.78**	**2.4**

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation ;3 - High correlation).

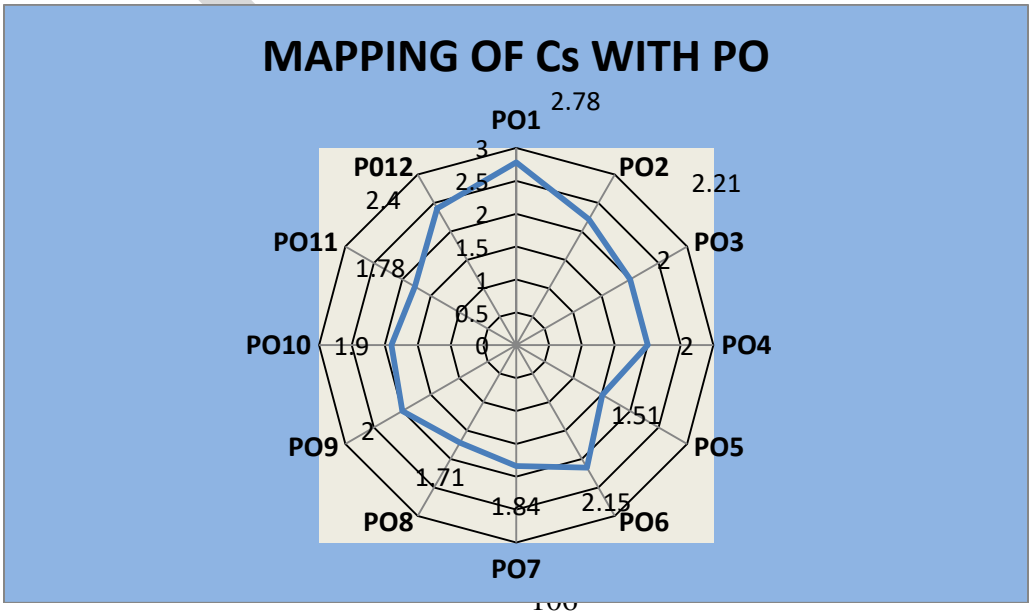

Figure 2. Mapping of Program outcome &course

(0 - No correlation; 1 - Low correlation; 2 - Medium correlation; 3 - High correlation)

Analysis of Cs, POs and PEOs:

On analyzing, the average score of individual program outcome ranges from 1.51 to 2.78. It shows, there exist a strong correlation of all Cs with that of PO1 & PO 6, whereas medium correlation between Cs and PO2 & PO12. Similarly, on analyzing, the average score of individual program educational objectives ranges from 2.21 to 2.62. It shows, there exist a strong correlation of all Cs with that of PEO4 & PEO5, whereas medium correlation between Cs and PEO1, PEO2 & PEO3.

Postgraduate PO-CO analysis

A.POST GRADUATE

1. M.Sc MLT CLINICAL CHEMISTRY

Program Educational Objectives (PEO)

Program educational objectives for under graduate program are as follows:

- **PEO1:**Ideally trained as technical skills, social behavior, and professional awareness incumbent upon a laboratory technician.
- **PEO2:**Ability to know the knowledge and search the retrieve information and materials related to individual clinical practice issues or overall health policy concerns.
- **PEO3:**Describe and demonstrate management / leadership skills and theories that can be applied in preparation to lead or manage effectively in a health care environment
- **PEO4:** Ability to demonstrate an awareness and appreciation of the delivery of culturally competent health care.
- **PEO5:**To set up/supervise/manage a diagnostic Biochemistry laboratory in hospitals including modern laboratory techniques, ensuring total quality assurance in clinical biochemistry and to render a quality service

Program outcome (PO)

At the end of the 2 year of Clinical Chemistry students should be able to

CHPO1: Able to explain clearly concepts and principles of biochemistry in health and disease and the student should know the structures and functions of biomolecules, their relations that form the basis of living organisms.

CHPO2: To know the principles of various laboratory estimations, instrumentations and rationale underlying biochemical laboratory investigations.

CHPO3: Perform important biochemical molecular biology techniques and acquire knowledge about the applications of various aspects of genetic engineering in medicine, forensic investigation and medico legal cases.

CHPO4: Explain biochemistry of the endocrine system and biochemical aspects of diagnosis and treatment of endocrinal disorders including conception, reproduction and contraception

CHPO5: Student should know to understand the anatomical organization, coordination and integrated functions of different systems of human body.

CHPO6: The student will be able to explain the basic nature of disease processes from the standpoint of causation, epidemiology, natural history, and the structural and functional abnormalities that result

CHPO7: At the end of the course student should demonstrate computational skills and understanding of the central concepts of modern statistical theory and their probabilistic foundation

CHPO8: Students can able to Communicate with stake holders of the health care system and Professionals who understand and follow the principles of bioethics/ ethics related to healthcare.

CHPO9: Student can able to know the principle, biochemistry and pathophysiology associated with tests performed in a clinical biochemistry laboratory and analytical instruments.

CHPO10: To identify various life style disorders with counselling & guidance advising the patients with proper, trained with basic life support skills and also practical skill Yoga to keep the body, mind, soul in health & hygiene**.**

Course (Cs)

M.Sc. M.LT Clinical Chemistry (CH) program under the CHOICE BASED CREDIT SYSTEM consists of following core courses namely: 1stYear M.Sc. M.LT Clinical Chemistry (CH) consists of General biochemistry – I, General biochemistry -II, Molecular biology, Human Anatomy and Physiology; 2ndYearM.Sc.M.LT Clinical Chemistry (CH) consists of: Endocrinology and Immunology, Clinical Chemistry, Instrumentation and the laboratory management Also a**s per the UGC guidelines, during the study period an Allied Health Science Student will be studying two Discipline Elective Courses, one Skill enhancement courses, one Generic Elective Courses and.** Thus theM.Sc.M.LT Clinical Chemistry (CH) program consists of following Electives courses, namely Skill **enhancement courses namely** Basic Life support**,** English for clinical communication, basics of yoga and practices. **Generic**

Elective Course Namely Hospital safety management, Lifestyle and Environmental sciences. **Discipline Elective Courses Namely** Research methodology and biostatistics, Cell culture Technologies or Medical Informatics. Each course has its well defined course outcome mentioned in individual course book.

Mapping and analysis of Cs, POs and PEOs

The process of attainment of Cs, POs and PEOs starts from writing appropriate COs for each course in the three year plus one-year internship degree program. As Undergraduate Allied Health Science program is Non-regulatory, COs and POs are defined by SBV norms. Based on this, course outcomes are refined by the respective faculty members of the course using action verbs of learning levels as suggested by Bloom Taxonomy. Then, a correlation is established between Cs and POs and Cs and PEOs on the scale of 0 to 3 (‘0‘being no correlation, 1 being the low correlation, 2 being medium correlation and 3 being high correlation) based on their perception. The average score is calculated and is correlated with the courses as a whole not individually. A 16x5 mapping matrix of COs-PEOs **(Table.1)** and 16 x10 mapping matrix of Cs-POs **(Table.2)** is prepared at the institute level in this regard for all courses in the program. Radar graph was plotted to find out the level of correlation between PEO-Cs(**Fig.1**) and PO-Cs(**Fig.2**).

Table 1. CO-PEO Mapping matrix

S.NO	COURSE	PEO1	PEO2	PEO3	PEO4	PEO5
1.	General Biochemistry-I	2	3	3	3	2
2.	General Biochemistry-II	3	3	2	3	2
3.	Molecular biology	2	2	2	3	3
4.	Human Anatomy &Physiology (HA&P)	3	2	1	1	2
5.	Research Methodology &Biostatistics (RM&B)	2	1	3	3	1
6.	Environmental Studies(EVS)	2	1	2	1	2
7.	Hospital safety management (HSM)	2	2	2	2	3
8.	Life style disorder(LSD)	2	2	2	2	3
9.	Endocrinology and Immunology (EI)	1	2	2	1	1
10.	Clinical Chemistry (CCH)	3	3	2	3	3
11.	Instrumentation and the laboratory management (IL)	3	3	3	2	2
12.	Bio medical waste management(BWM)	3	3	3	3	3
13.	Hospital infection control(HIC)	3	3	3	3	2
14.	Basic life support(BLS)	1	2	2	1	3
15.	English for clinical communication(ECC)	2	2	3	2	2
16.	Yoga for Practice (YP)	2	0	1	2	0
AVERAGE SCORE		**2.25**	**2.12**	**2.25**	**2.18**	**2.12**

CO-PEO Mapping matrix

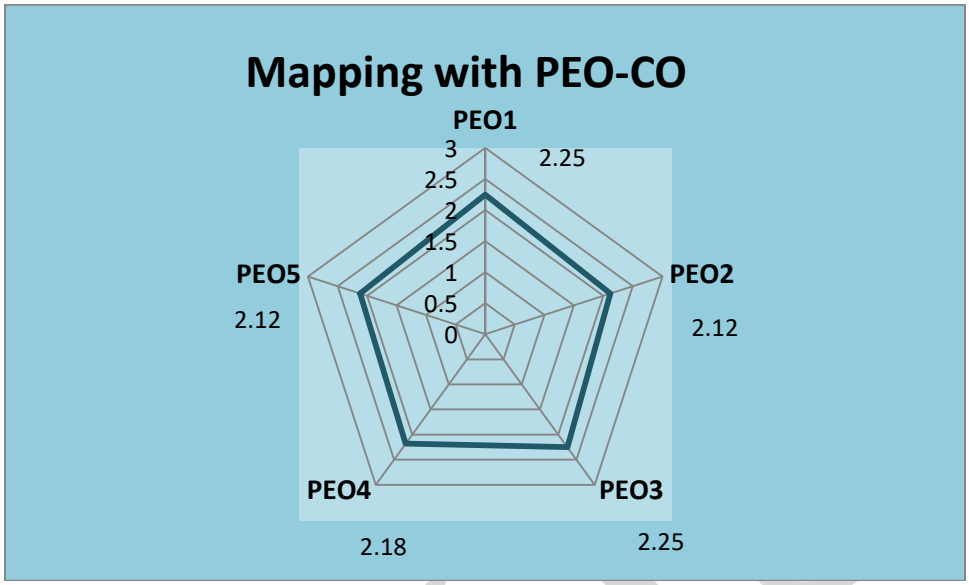

Figure 1. Mapping of Program educational objectives & course(0 - no correlation; 1 - Low correlation; 2 - Medium correlation ;3 - High correlation

Table 2. Cs-PO Mapping matrix

S.NO	COURSE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
1.	General Biochemistry-I	2	3	3	2	2	3	1	2	3	3
2.	General Biochemistry-II	3	3	2	2	3	2	2	2	3	3
3.	Molecular biology	2	3	3	3	3	2	3	3	2	2
4.	Human Anatomy &Physiology (HA&P)	2	2	1	3	1	3	2	2	3	2
5.	Research Methodology &Biostatistics (RM&B)	1	1	2	3	2	2	2	1	2	2
6.	Environmental Studies(EVS)	1	2	2	2	2	2	1	2	3	3
7.	Hospital safety management (HSM)	2	1	3	2	2	2	2	2	2	2

8.	Life style disorder(LSD)	1	2	2	1	2	2	3	3	3	3
9.	Endocrinology and Immunology (EI)	1	1	2	2	3	2	1	2	2	2
10.	Clinical Chemistry (CCH)	3	2	2	3	3	2	2	3	3	3
11.	Instrumentation and the laboratory management (IL)	3	2	3	2	3	3	2	2	2	3
12.	Bio medical waste management(BWM)	2	2	3	3	3	3	2	2	3	3
13.	Hospital infection control(HIC)	2	1	2	2	2	2	2	3	2	3
14.	Basic life support(BLS)	2	2	2	2	2	2	2	3	3	2
15.	English for clinical communication(ECC)	3	1	2	3	3	3	2	3	2	3
16.	Yoga for Practice (YP)	2	1	2	2	2	3	3	2	2	3
AVERAGE SCORE		**2.0**	**2.1**	**2.2**	**2.2**	**2.3**	**2.4**	**2.4**	**2.5**	**2.5**	**2.6**

MAPPING WITH Cs- PO

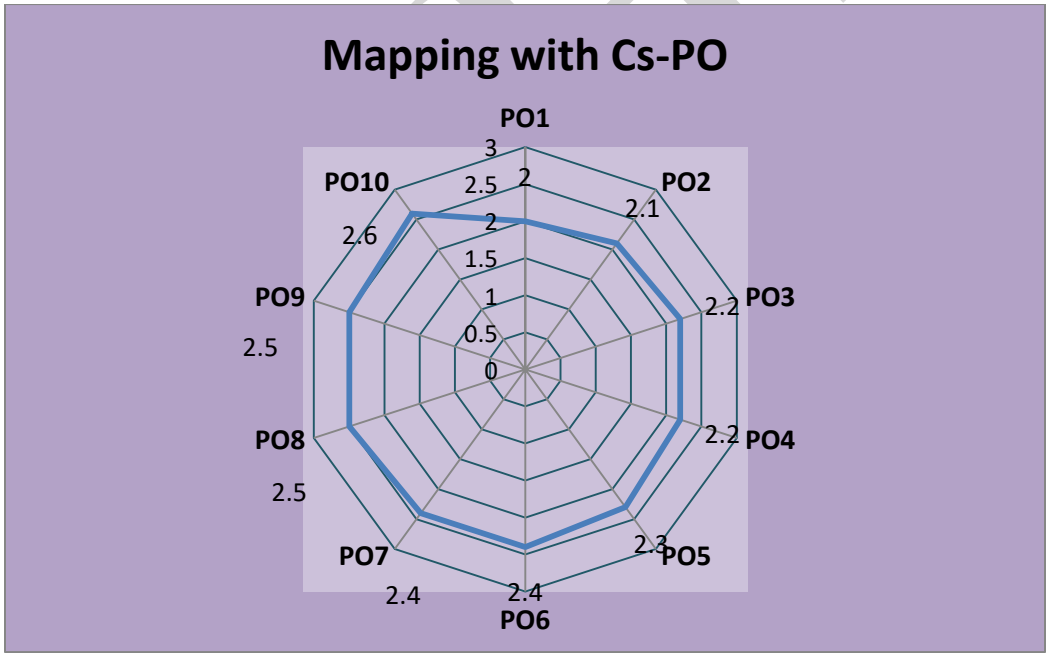

Figure 2. Mapping of Program educational objectives& course
(0 - No correlation; 1 - Low correlation; 2 - Medium correlation ;3 - High correlation)

Analysis of Cs, POs and PEOs

On analyzing, the average score of individual program outcome ranges from 2.0 to 2.6. It shows, there exist a strong correlation of all Cs with that of PO1 & PO10, whereas medium correlation between Cs and PO2 to PO 5. Similarly, on analyzing, the average score of individual program educational objectives ranges from 2.12 to 2.25 It shows, there exist a strong correlation of all Cs with that of PEO1 & PEO3, whereas medium correlation between Cs and PEO2, PEO4 & PEO 5.

A. POST GRADUATE

2. M.SC CLINICAL NUTRITION

Program Educational Objectives (PEO)

Program educational objectives for under graduate program are as follows:

- **PEO1:**Ideally trained as clinical nutritionist, dietitians to implement and change dietary habits of an individual or population.
- **PEO2:**Continue to develop as promising healthcare connoisseurs through life-long learning and higher education in health sciences.
- **PEO3:**Ability to work in the field of research to ensure the quality and nutritional values of food items in food industry.
- **PEO4:** Technologist can also have ability to work with various fitness clubs, public health agencies, government projects, to educate on individuals about nutrition and eating a balanced diet to prevent diseases.
- **PEO5 :**Exercise entrepreneurial qualities in a responsive, ethical and innovative manner in health care system.

Program outcome (PO)

At the end of the 2 year of Clinical Nutrition Should be able to

PROGRAMME OUTCOMES FOR M.SC CLINICAL NUTRITION

CNPO1:Performs the duty as a Dietitian and Nutritionist with leadership qualities having a good written & communication skill. Identify, formulate, research literature, and solve nutritional deficiencies using fundamentals of clinical nutrition & dietetics

CNPO2: To Know the anatomy, physiology of humans interrelated with their structures and to apply the practical knowledge in food science, biochemistry and food microbiology.

CNC PO3: To promote the patient and the healthcare team the complexity of the disease, the burdens of feeding and the decisions that may help determine the route of care for the patient, such as more aggressive or palliative care.

CNPO4: To Know to understand statistical report writing, presentations and documentations, communicate efficiently with the needy about the importance of healthy individual and society.

CNPO5: To enable the students to understand the special nutritional requirements for physical activities related to sports, exerciseand assess societal, environmental, health, safety, and cultural issues, and food within local and global contexts.

CN PO6: Active in the patients cares as the consultant dietician or community dietician or in a medical team reporting on the nutritional status of the patient or community to the health governing bodies.

CN PO7: To Develop innovative food products or substitutes with nutraceuticals functional foods for common diseases or alternate solutions to create value and wealth for the betterment of the individual and society at large.

CN PO8: Recognize the need and have the ability, to engage in independent learning for continual development as a health professional.

CN PO9: To gain knowledge about laboratory safety precautions adhering to the environmental needs of the society, and preventing the spread of infectious diseases and to study impacts of Environment studies & Hospital Safety Management, hospital infection control.

CN PO10: To identify various life style disorders with counselling & guidance advising the patients with proper diet, hygiene and trained with basic life support skills and also practical skill Yoga to keep the body, mind, soul in health & hygiene.

Course(Cs)

M.Sc Clinical Nutrition (CN) program under the CHOICE BASED CREDIT SYSTEM consists of following core courses namely: 1st Year M.Sc Clinical Nutrition(CN) consists of:Nutritional Biochemistry,Food sciences ,Nutraceuticals and functional foods, Medical Nutrition Therapy-I, Human Anatomy and Physiology; 2nd YearM.Sc Clinical Nutrition (CN) consistsof: Food Microbiology, Nutrition through life cycle, Public Health Nutrition,Medical Nutrition Therapy –II. Also a**s per the UGC guidelines, during the study period an Allied Health Science Student will be studying twoDiscipline Elective Courses, oneSkill enhancement courses, oneGeneric Elective Courses and.** Thus theM.Sc Clinical Nutrition (CN) program consists of following Electives courses, namely **Skill enhancement courses namely** Basic Life support**,** English for clinical communication, basics of yoga and practices.**Generic Elective Course**namelyHospital safety management,Lifestyle and Environmental sciences. **Discipline Elective Courses namely** Research methodology and biostatistics Each course has its well defined course outcome mentioned in individual course book.

Mapping and analysis of Cs, POs and PEOs

The process of attainment of Cs, POs and PEOs starts from writing appropriate COs for each course in the three year plus one-year internship degree program.As Undergraduate Allied Health Science program is Non-regulatory, COs and POs are defined by SBV norms.Based on this, course outcomes are refined by the respective faculty members of the course using action verbs of learning levels as suggested by Bloom Taxonomy. Then, a correlation is established between Cs and POs and Cs and PEOs on the scale of 0 to 3 (‘0‘being no correlation, 1 being the low correlation, 2 being medium correlation and 3 being high correlation) based on their perception. The average score is calculated and is correlated with the courses as a whole not individually. A 17x5 mapping matrix of COs-PEOs **(Table.1)** and 17 x10 mapping matrix of Cs-POs **(Table.2)** is prepared at the institute level in this regard for all courses in the program. Radar graph was plotted to find out the level of correlation between PEO-Cs**(Fig.1)** and PO-Cs**(Fig.2**).

Table 1. CO-PEO Mapping matrix

S.NO	COURSE	PEO1	PEO2	PEO3	PEO4	PEO5
1.	Nutritional Biochemistry (NB)	2	3	3	3	2
2.	Food science(FS)	3	3	2	3	2
3.	Nutraceuticals and Functional Foods (NF)	2	2	2	3	3
4.	Medical Nutrition Therapy(MNT)	3	3	3	3	3
5.	Human Anatomy &Physiology (HA&P)	3	2	3	1	2

6.	Research Methodology &Biostatistics (RM&B)	2	2	3	3	1
7.	Environmental Studies(EVS)	2	1	2	1	2
8.	Hospital safety management (HSM)	2	2	3	2	3
9.	Life style disorder(LSD)	2	2	2	2	3
10.	Food Microbiology(FM)	1	3	2	2	1
11.	Nutrition through life cycle(NLC)	3	3	2	3	3
12.	Public health Nutrition(PHN)	3	3	3	2	2
13.	Medical Nutrition therapy (MNT-II)	3	3	3	3	3
14.	Sports Nutrition (SN)	3	3	3	3	2
15.	Basic life support(BLS)	1	2	2	2	2
16.	English for clinical communication(ECC)	2	2	1	2	2
17.	Yoga for Practice (YP)	1	1	2	1	1
AVERAGE SCORE		**2.23**	**2.35**	**2.41**	**2.29**	**2.17**

CO-PEO Mapping matrix

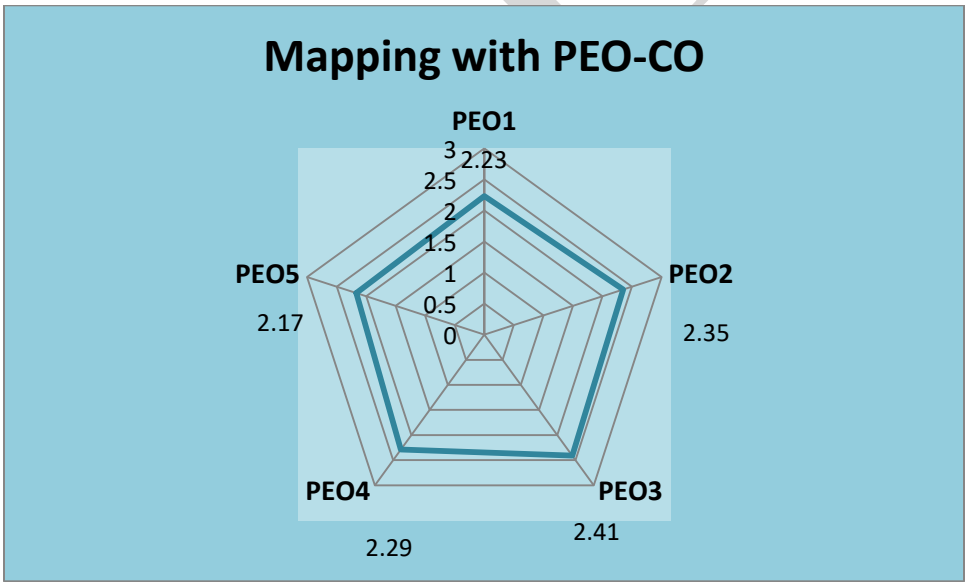

Figure 1. Mapping of Program educational objectives& course
(0 - no correlation; 1 - Low correlation; 2 - Medium correlation ;3 - High correlation

Table 2. Cs-PO Mapping matrix

S.NO	COURSE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
1.	Nutritional Biochemistry (NB)	2	3	3	2	2	3	1	2	3	3

2.	Food science(FS)	3	3	2	2	3	2	2	2	3	3
3.	Nutraceuticals and Functional Foods (NF)	2	3	3	3	3	2	3	3	2	2
4.	Medical Nutrition Therapy(MNT)	2	3	3	3	2	2	2	2	3	3
5.	Human Anatomy &Physiology (HA&P)	2	2	1	3	1	3	2	2	3	2
6.	Research Methodology &Biostatistics (RM&B)	1	1	2	3	2	2	2	1	2	2
7.	Environmental Studies(EVS)	1	2	2	2	2	2	1	2	3	3
8.	Hospital safety management (HSM)	2	1	3	2	2	2	2	2	2	2
9.	Life style disorder(LSD)	1	2	2	1	2	2	3	3	3	3
10.	Food Microbiology(FM)	1	1	2	2	3	2	1	2	2	2
11.	Nutrition through life cycle(NLC)	3	2	2	3	3	2	2	3	3	3
12.	Public health Nutrition(PHN)	3	2	3	2	3	3	2	2	2	3
13.	Medical Nutrition therapy (MNT-II)	2	2	3	3	3	3	2	2	3	3
14.	Sports Nutrition (SN)	2	1	2	2	2	2	2	3	2	3
15.	Basic life support(BLS)	2	2	2	2	2	2	2	3	3	2
16.	English for clinical communication(ECC)	3	1	2	3	3	3	2	3	2	3
17.	Yoga for Practice (YP)	2	1	2	2	2	3	3	2	2	3
AVERAGE SCORE		**2.0**	**2.1**	**2.2**	**2.2**	**2.3**	**2.4**	**2.4**	**2.5**	**2.5**	**2.6**

MAPPING CS WITH PO

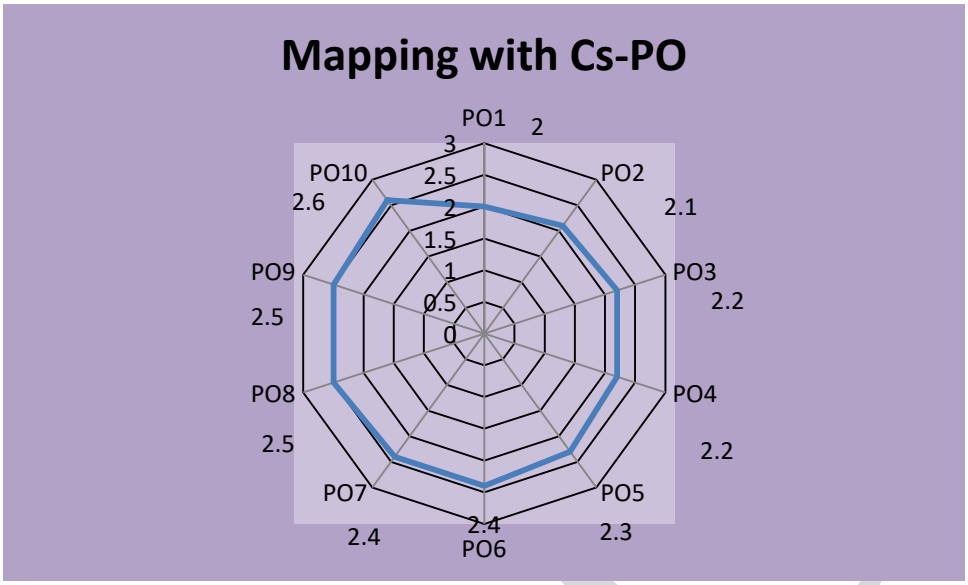

Figure 2. Mapping of Program educational objectives& course(0 - no correlation; 1 - Low correlation; 2 - Medium correlation ;3 - High correlation

Analysis of Cs, POs and PEOs

On analyzing, the average score of individual program outcome ranges from 2.0 to 2.6. It shows, there exist a strong correlation of all Cs with that of PO9 & PO10, whereas medium correlation between Cs and PO6 to PO 8. Similarly, on analyzing, the average score of individual program educational objectives ranges from 2.17 to 2.41 It shows, there exist a strong correlation of all Cs with that of PEO2 & PEO3, whereas medium correlation between Cs and PEO1, PEO4 & PEO 5.

PRINCIPAL

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