2. PROGRAM EDUCATION OBJECTIVES (PEOs)

The overall objective of the learning outcome-based curriculum framework (LOCF) for MSc Perfusion Technology are as follows:

PEO No.	Education Objective
PEO 1	Students will be able to use their fundamental knowledge and clinical & technical competence in Cardiopulmonary Bypass as and when required to achieve professional excellence.
PEO 2	Students will demonstrate strong and well defined clinical & practical skills in Perfusion related to Cardiopulmonary Bypass
PEO 3	Students will be able to practice the profession with highly professional and ethical attitude, strong communication skills, and effective professional skills to work in an inter-disciplinary team.
PEO 4	Students will be able to use interpersonal and collaborative skills to identify, assess and formulate problems and execute the solution related to Extracorporeal Circulation
PEO 5	Students will be able to imbibe the culture of research, innovation, entrepreneurship and incubation.
PEO 6	Students will be able to participate in lifelong learning process for a highly productive career and will be able to relate the concepts of Perfusion technology towards serving the cause of the society.

3. GRADUATE ATTRIBUTES

S No.	Attribute	Description
1	**Domain Knowledge**	Demonstrate comprehensive knowledge, competency and understanding of one or more disciplines that form a part of a professional domain
2	**Clinical / Hands-on skills**	Demonstrate clinical / hands-on skills in order to deliver and manage quality health care services
3	**Communication Skills**	Demonstrate the ability to listen carefully, read and write analytically, and present complex information in a clear and concise manner to different groups using appropriate media.
4	**Team work**	Demonstrate the ability to effectively and efficiently work and collaborate with diverse teams in the best interest of health care needs of the community
5.	**Professional ethics**	Demonstrate the ability to embrace moral/ethical values in conducting one's life, formulate a position/argument about an ethical issue from multiple perspectives, and use ethical practices in professional life.
6.	**Research / Innovation-related Skills**	A sense of inquiry and investigation for raising relevant and contemporary questions, synthesizing and articulating.
7.	**Critical thinking and problem solving**	Demonstrate capacity to think critically and extrapolate from what one has learned by applying their competencies and knowledge to solve different kinds of non-familiar problems in real life situations.
8	**Information/Digital Literacy**	Demonstrate capability to use ICT in a variety of learning situations, demonstrate ability to access,

S No.	Attribute	Description
		evaluate, and use a variety of relevant information sources and to use appropriate software for analysis of data.
9	**Multicultural Competence**	Demonstrate knowledge of the values and beliefs of multiple cultures and a global perspective, effectively engage in a multicultural society, interact respectfully with diverse groups.
11.	**Leadership qualities**	Demonstrate leadership capability to formulate an inspiring vision, build a team, motivate and inspire team members to attain organizational vision
12.	**Lifelong Learning**	Demonstrate the ability to acquire knowledge and skills that are necessary for participating in learning activities throughout life, through self-paced and self-directed learning aimed at personal development, meeting economic, social and cultural objectives, and adapting to demands of work place through knowledge/skill development/reskilling.

4. QUALIFICATION DESCRIPTORS:

a) Demonstrate (i) a systematic, extensive and coherent knowledge and understanding of an academic field of study as a whole and its applications, and links to related disciplinary areas/subjects of study, including a critical understanding of the established theories, principles and concepts, and of a number of advanced and emerging issues/theories in the field of Perfusion Technology; (ii) procedural knowledge that creates different types of professionals related to the disciplinary/subject area of study, including research and development, teaching and government and public service; (iii) skills in areas related to one's specialization and current developments in the academic field of Perfusion Technology, including a critical understanding of the latest developments in the area of specialization, and an ability to use established techniques of analysis and enquiry within the area of specialization in Perfusion Technology.

b) Demonstrate comprehensive knowledge about materials and methods, including professional literature relating to essential and advanced learning areas pertaining to the chosen disciplinary area(s) and field of study, and techniques and skills required for identifying/solving problems and issues relating to the disciplinary area and field of study.

c) Demonstrate skills in identifying information needs, collection of relevant quantitative and/or qualitative data drawing on a wide range of sources, analysis and interpretation of data using methodologies as appropriate to the subject(s) for formulating evidence-based solutions and arguments.

d) Use knowledge, understanding and skills for critical assessment of a wide range of ideas and complex problems and issues relating to the field

e) Communicate appropriately with all stakeholders, and provide relevant information to the members of the healthcare team

f) Address one's own learning needs relating to current and emerging areas of study, making use of research, development and professional materials as appropriate, including those related to new frontiers of knowledge

g) Apply one's domain knowledge and transferable skills that are relevant to some of the job trades, employment opportunities and seek solutions to real-life problems.

5. PROGRAM OUTCOMES (POs):

After successful completion of Masters / MSc Perfusion Technology program students will be able to:

PO No.	Attribute	Competency
PO 1	**Domain knowledge**	Possess and acquire **scientific knowledge** to work as a health care professional
PO 2	**Clinical/ Hands-on skills**	Demonstrate and possess **clinical and hands-on skills** to provide quality health care services
PO 3	**Team work**	Demonstrate **team work skills** to support shared goals with the interdisciplinary health care team to improve societal health
PO 4	**Ethical value & professionalism**	Possess and demonstrate **ethical values and professionalism** within the legal framework of the society
PO 5	**Communication**	**Communicate effectively** and appropriately with the interdisciplinary health care team and the society
PO 6	**Evidence based practice**	Demonstrate high quality **evidence based practice** that leads to excellence in professional practice
PO 7	**Life-long learning**	Enhance knowledge and skills with the use of advancing technology for the **continual improvement** of professional practice
PO 8	**Entrepreneurship, leadership and mentorship**	Display **entrepreneurship, leadership and mentorship** skills to practice independently as well as in collaboration with the interdisciplinary health care team

6. COURSE STRUCTURE, COURSE WISE LEARNING OBJECTIVE, AND COURSE OUTCOMES (COs)

SEMESTER - I

Course Code	Course Title	Credit Distribution (hours/week)					Marks Distribution		
		L	T	P	CL	CR	IAC	ESE	Total
ABS6101	Advanced Biostatistics & Research Methodology	3	1	-	-	4	30	70	100
PFT6101	Cardiology	2	-	-	-	2	50	50	100
PFT6102	Cardiac Surgery	2	-	-	-	2	50	50	100
PFT6103	Introduction to OT & Perfusion Technology	2	-	-	-	2	50	50	100
PFT6131	Clinical perfusion - I	-	-	-	27	9	100	-	100
	Total	**9**	**1**	**-**	**27**	**19**	**280**	**220**	**500**

Note:
ESE for ABS6101 will be for 50 marks and normalized to 70 marks for grading
ESE for PFT6101, PFT6102, PFT61023 will be conducted out of 50 marks

SEMESTER - II

Course Code	Course Title	Credit Distribution (hours/week)					Marks Distribution		
		L	T	P	CL	CR	IAC	ESE	Total
EPG6201	Ethics & Pedagogy	1	1	-	-	2	100	-	100
PFT6201	Medical ethics & legal aspects	2	-	-	-	2	100	-	100
PFT6202	Equipment's in Perfusion Technology & Physiology & Pathology of Perfusion	3	-	-	-	3	50	50	100
PFT6203	Pharmacology of cardiovascular drugs	2	-	-	-	2	50	50	100
PFT6251	Research Project - I	-	-	9	-	3	100	-	100
PFT6231	Clinical Perfusion - II	-	-	-	27	9	100	-	100
	Total	**8**	**1**	**9**	**27**	**21**	**500**	**100**	**700**

Note: PFT6202 will be conducted for 100 marks and normalized to 50 marks for grading

SEMESTER - III

Course Code	Course Title	Credit Distribution (hours/week)				Marks Distribution			
		L	T	P	CL	CR	IAC	ESE	Total
PFT7101	Clinical applications of perfusion technology	2	1	-	-	3	50	50	**100**
PFT7102	Cardiac surgery without CPB Mechanical circulatory support ,and Robotic Surgery	1	1	-	-	2	50	50	**100**
PFT7103	Haematology as relevant to perfusion and organ transplantation	1	1	-	-	2	50	50	**100**
PFT7151	Research Project - II	-	-	9	-	3	100	-	**100**
PFT7131	Clinical Perfusion - III	-	-	-	30	10	100	-	**100**
	Total	**4**	**3**	**9**	**30**	**20**	**350**	**150**	**500**
Note: PFT7101 will be conducted for 100 marks and normalized to 50 marks for grading									

SEMESTER - IV

Course Code	Course Title	Credit Distribution (hours/week)					Marks Distribution		
		L	T	PW	CL	CR	IAC	ESE	Total
PFT7251	Research Project - III	-	-	30	-	10	50	50	100
PFT7231	Clinical Perfusion - IV	-	-	-	30	10	100	-	100
	Total	**-**	**-**	**30**	**30**	**20**	**150**	**50**	**200**
Note: ESE for PFT7251 will be in the form of Dissertation - Presentation and Viva-voce PFT7231 has only IAC for 100 marks									

OVERALL CREDIT DISTRIBUTION

Semester	Credit distribution					Marks Distribution		
	L	T	P/PW	CL	CR	IAC	ESE	Total
I - SEMESTER	9	1	-	27	19	280	220	500
II - SEMESTER	8	1	9	27	21	500	100	700
III - SEMESTER	4	3	9	30	20	350	150	500
IV - SEMESTER	-	-	30	30	20	150	50	200
Grand Total	21	5	48	114	80	1280	520	1900

INTERNAL ASSESSMENT COMPONENT (IAC) WEIGHTAGE DISTRIBUTION

(Department of Perfusion Technology)

Theory		Practical	
Components	**%**	**Components**	%
Mid semester exam	60	Mid semester exam	60
Class seminar	20	Record submission	20
Assignments/Quiz	20	Competency in bench mark	20