PROGRAM OUTCOME (POs)	
Course Code	**B.Sc. PERFUSION TECHNOLOGY**
PO1	**Knowledge and skills development** -Advanced understanding of cardiovascular systems, hands-on perfusion techniques, equipment management, and patient monitoring skills.
PO2	**Critical thinking** -Analyze complex hemodynamic data, assess patient needs, and adapt perfusion strategies for optimal surgical outcomes.
PO3	**Problem solving** - Applying critical thinking to optimize extracorporeal circulation, troubleshoot equipment, and ensure patient safety during surgery.
PO4	**Professional ethics** - Understanding patient confidentiality, ensuring informed consent, maintaining competence, and prioritizing patient safety in practice.
PO5	**Communication skills** - Effective communication with surgical teams, patient education, precise documentation, and collaborative decision-making in perfusion technology.
PO6	**Individual and teamwork** - Collaborated on optimizing perfusion protocols, enhancing patient outcomes through team-based research and clinical practice.
PO 7	**Holistic development**: Development of intellectual, Physical, Emotional & Social abilities, so as to be capable of facing the demands & challenges of every day life.
PO8	**Lifelong learning** - To develop continuous learning attitude in context of research, advances in clinical practices and to inculcate professionalism and evidence based practices

Course Outcomes (COs)	
Course Code	**B.Sc. PERFUSION TECHNOLOGY**
SEMESTER I	
BPT 101 L	**Human Anatomy Part I**
CO1	Define basic technical terminology and language associated with medical anatomy
CO2	Identify and describe the gross anatomy of various tissues and organs in the human body along with Skeletal and Muscular Systems
CO3	Understand and demonstrate the anatomy of Respiratory system, Circulatory system, Digestive system and Excretory system with it's clinical application
BPT 102 L	**Human Physiology Part I**
CO1	Describe basic physiological principles involved in normal funtioning of the human body and thier applications in comprehending the pathophysiology of various diseases.
CO2	To understand the basic mechanism operating and regulating different organ systems.
CO3	Ability to identify techniques to evaluate the funtioning of organ systems and interpret the results as normal or abnormal.
BPT 103 L	**General Biochemistry & Nutrition**
CO1	Understand the fundamental principles of biochemistry, including the chemistry and functions of biomolecules such as carbohydrates, proteins, lipids and nucleic acids.

CO2	Gain insights into the principles of bioenergetics and enzymology in human body.
CO3	Understand the basics of collection, handling and processing analysis of blood and urine samples for clinical diagnostics.
BPT 104 L	**Introduction to National Health Care System (Multidisciplinary/Interdisciplinary)**
CO1	Understand the measures of the health services and high-quality health care
CO2	Gain Basic insight into the main features of Indian health care delivery system and how it compares with the other systems of the world.
CO3	Introduction to Background objectives, action plan, targets, operations,in various National Heath Programmes.
CO4	Introduction the AYUSH System of medicines.
BPT 105 P	**Community Engagement and Clinical Visit (Including related practicals to the Parent course)**
CO1	Understand the role of health professional in community
CO2	Personality Development
AEC 001 L	**English and Communication Skills**
CO1	Develop ability to read, write and speak better in English language
CO2	Grow personally and professionally to develop confidence in the field of healthcare.

AEC 002 L	**Environmental Sciences**
CO1	Understand and define terminology commonly used in enviromental sciences
CO2	Understand the concepts of ecosystems, biodiversity and its conservation
CO3	Understand the relationship between humans and enviroment
CO4	Discuss the factors affecting the availability of natural resources, their conservation and management.
CO5	Discuss the goals, targets, challenges and global strategies for sustainable development
SEMESTER II	
BPT 106 L	**Human Anatomy Part II**
CO1	Understand and demonstrate the anatomy of Reproductive system, Endocrine system, Nervous system, Sensory system and Lymphatic system with it's clinical application
BPT 107 L	**Human Physiology Part II**
CO1	Understand the basic physiological fucntions of Special senses and Skin,.
CO2	To understand the basic mechanism, operation and regulation of different systems such as Nervous system, Endocrine system, Reproductive system and Excretory system
CO3	Ability to identify techniques to examination of the physiological funtioning of sensory and motor systems and interpret the results as normal or abnormal.
BPT 108 L	**General Microbiology**
CO1	Understanding the Basic principles of Microbiology with General Methods for recovery, identification of pathogens, culture techniques, procedures, antibiotic testing and sterilization techniques.
CO2	Understand the applications of universal safety precautions.
CO3	Adept knowledge about the systemic bacteriology including morphology, species, lab diagnosis, isolation and identification.
CO4	Basic knowledge of pathogenic diseases and their clinical features
BPT 109 L	**Basic Pathology & Hematology**
CO1	Know the basic concepts in hematology and clinical pathology
CO2	Ability to collect blood and urine sample under guidance
CO3	Ability to perform urine experiments under guidance
BPT 110 L	**Introduction to Quality and Patient Safety (Multidisciplinary / Interdisciplinary)**
CO1	Understand the basic concepts of Quality in Health Care System and develop skills to implement sustainable quality assurance programs in the health system.

CO2	Understand the basics of emergency care and life support skills.
CO3	Understanding of the concepts for infection prevention and control.
CO4	Knowledge on the principles of on-site disaster management and prevent harm to workers, property, the environment and the general public.
CO5	Ability to apply healthcare quality improvement and patient safety principles, concepts, and methods at the micro, meso and macro system levels.
BPT 111 P	**Community Engagement and Clinical Visit (Including related practicals to the Parent course)**
CO1	Understand the role of health professional in community
CO2	Personality Development

SEC 001 L	Medical Bioethics & IPR
CO1	Ability to recognise and understand ethical concerns in research and healthcare sector.
CO2	Adapt skills to rationally justify decisions by understanding the complexity and multi - dimensionality of medical or clinical ethical concerns.
CO3	Gain awareness about significance of patent, copyright, plagarism and their applications in legal problems
SEC 002 L	**Human Rights & Professional Values**
CO1	Acquire conceptual clarity and develop respect for norms and values of freedom, equality, fraternity and justice
CO2	Awareness of civil society organizations and movements promoting human rights
CO3	Understand the difference between values of human rights and their duties
SEMESTER III	
BPT 112 L	**Applied Pharmacology**
CO1	Students will be proficient in Pharmacology with proficient knowledge about the different drugs / medicines to be given in various cardiovascular diseases, dose calculation and mode of administration.
CO2	Also recent advances in pharmacology will play a key role in research aspect of the students.
CO3	Implement infection prevention and control practices, address antibiotic resistance, and prepare for and manage disasters, including resource and psychological impact management.
BPT 113 L	**Applied Physiology and Biochemistry**
CO1	At the end of this semester students will be able to evaluate, diagnose and help in treating the patients and differentiate patients eligible for taking for surgery or to be given meditational treatment.
CO2	Understanding the key biochemical pathways and reactions relevant to perfusion, such as oxygen transport, acid- base balance, and electrolyte management, and how these processes are regulated in the human body.
CO3	Understand and interpret biochemical and physiological data from monitoring devices used in perfusion, enabling precise adjustments during the procedure.
BPT 114 L	**Basics of Perfusion Technology**
CO1	Students will understand the use of equipments in CPB and also hand on training with the equipments and materials used.
CO2	Understand the principles behind cardiopulmonary bypass, including the management of blood flow, oxygenation, temperature, and hemodynamics during surgery.
GEC 001 L	**Pursuit of Inner Self Excellence (POIS)**
CO1	Students will become self-dependent, more debility for their study and career related matter ecisive and develop intuitive
CO2	Student's ability to present their ideas will be developed.
CO3	Enhanced communication skills, public speaking & improved Presentation ability.

CO4	Students will be able to explore their inner potential and inner ability to become a successful researcher or technician & hence become more focused.
CO5	Students will observe significant reduction in stress level.
CO6	With the development of personal attributes like Empathy, Compassion, Service, Love & brotherhood, students will serve the society and industry in better way with teamwork and thus grow professionally.
GEC 002 L	**Organizational Behavior**
CO1	Describe and apply motivation theories to team and organizational scenarios in order achieve a team's or an organization's goals and objectives.
CO2	Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviors in team and organizational settings.
CO3	Explain types of teams and apply team development, team effectiveness, and group decision making models and techniques.
SEMESTER IV	
BPT 116 L	**Drugs and Components used in OT**
CO1	Students will be proficient in Pharmacology with proficient knowledge about the different drugs / medicines to be given in various cardiovascular diseases, dose calculation and mode of administration.
CO2	Learn about the types and administration of intravenous fluids, crystalloids, and colloids used to maintain electrolyte balance, fluid volume, and osmolarity during procedures.
CO3	Learn how to recognise and respond to adverse drug reactions, allergic responses, and complications related to drug administration during CVTS procedures.

BPT 117 L	**Cardiovascular Heart Diseases**
CO1	Students will gain in-depth knowledge of the mechanisms, risk factors, and progression of cardiovascular diseases.
BPT 118 L	**Introduction of Perfusion Techniques**
CO1	Students will be able to collect the data before and at the time of surgery for equipment evaluation
CO2	Gain introductory skills in monitoring patient parameters during perfusion, such as arterial pressure, venous return, oxygen saturation, and blood gas levels, as well as understanding how to interpret and respond to.
AEC 003 L	**Computers and Applications**
CO1	Introduction to Hardware and processing of computers and storage devices.
CO2	Adept knowledge of computer software and applications such as Microsoft office (Word, Excel and Power Point)
CO3	Application of operating systems, computer networks & internet in Health Care Settings.
AEC 004 L	**Good Clinical Laboratory Practice and Research Skills**
CO1	Proficiency an adept knowledge of Good Clinical Laboratory Practice (GCLP), ethical principles and guidelines to ensure patient rights and welfare in clinical research.
CO2	Understand the importance of Ethical Guidelines and Good Documentation Practices (GDP) in conducting Clinical Research.
CO3	Effectively understand the Basics of Biostatistics, Research Study Designing, Methodology, Implementation and Grant Application.
SEMESTER V	
BPT 120 L	**Perfusion Technology: Clinical**
CO1	To learn the pharmacokinetics and pharmacodynamics during cardiopulmonary bypass.
CO2	Dealing with conduction and termination of cardiopulmonary bypass and problems associated with it
BPT 121 L	**Perfusion Technology: Applied**
CO1	Techniques that can minimise the ill effects of the machinery and to improve patient outcome and the activated systemic inflammatory response system.
CO2	Applying perfusion principles in real - world settings, focusing on patient- specific considerations and decision- making during cardiopulmonary bypass and other extracorporeal procedures.
DSE 001 L	**Basics of Clinical Skill Learning**
CO1	Ability to Measure Vital Signs, do basic physical Examination of the patients, NG tube basics, Administration of Medicines

CO2	Understand about Asepsis, and the Cleanliness related to asepsis and on mobility of the patients
DSE 002 L	**Hospital Operation Management**
CO1	Understand and apply the knowledge of Medico-Legal regulations and Medical Ethics in Healthcare System.
CO2	Ability to utilize Hospital Information system in Hospital services.
CO3	Understand the operation management of Equipment's and medical records in Health Care services.
SEMESTER VI	
BPT 123 L	**Perfusion Technology : Advanced**
CO1	Use of machinery and amenities during emergency cases and conditions.
CO2	Management of complications related to bypass and advanced extra corporeal life support.
CO3	Team management of perfusion accidents and management.
BPT 124 L	**Cardiopulmonary Resuscitation: BLS and ACLS**
CO1	Students will demonstrate proficiency in performing high- quality cardiopulmonary resuscitation (CPR), including chest compressions, rescue breaths, and the use of automated external defibrillators (AEDs) in both adult and paeditric patients.
CO2	Students will learn to apply CPR techniques effectively in specialised settings like operating rooms, ICUs, and during cardiopulmonary bypass procedures, understanding the unique considerations for perfusionists.
BPT 125 L	**Recent Advances in Cardiopulmonary Bypass & Perfusion**
CO1	The students will gain knowledge about chances of a successful procedure.
CO2	To enable students, understand about benefit/risk to the patient if the procedure is successful/ unsuccessful.
CO3	The occurrence and management of various complications.