



Dow Institute of Cardiology
Dow University of Health Sciences

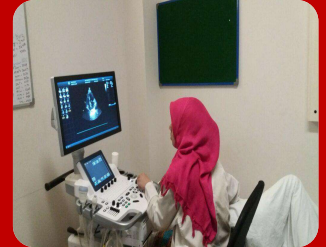
Prospectus

BS Cardiovascular Technology
Session 2024 - 2025



Website: www.duhs.edu.pk

Email: admissions@duhs.edu.pk





Vision and Mission of DUHS

Vision Statement

To be a pre-eminent academic institution committed to changing and saving lives

Our Mission

Providing outstanding patient centered education, training and clinical care informed by cutting-edge research and innovation generating and disseminating new knowledge

Message by Vice Chancellor



It is with great pride and enthusiasm that I extend a warm welcome to all prospective students interested in pursuing the **Bachelor in Cardiovascular Technology (BSCVT)** program at **Dow University of Health Sciences (DUHS)**. As one of the leading institutions in Pakistan dedicated to advancing healthcare education, we recognize the critical importance of specialized professionals in the field of cardiovascular health.

Cardiovascular diseases are among the leading causes of morbidity and mortality worldwide. As such, the need for skilled cardiovascular technologists is more important than ever. At DUHS, we are committed to training the next generation of healthcare professionals who will be at the forefront of diagnosing, treating, and managing cardiovascular conditions.

Our **Bachelor in Cardiovascular Technology program** offers an exceptional blend of theoretical knowledge and practical experience, ensuring that our graduates are not only well-versed in the latest cardiovascular technologies but also equipped with the essential skills to make meaningful contributions to the healthcare system. With state-of-the-art facilities, a comprehensive curriculum, and hands-on training in leading hospitals and medical institutions, we prepare our students to thrive in a dynamic and rapidly evolving field.

At DUHS, we believe in fostering an environment where academic excellence, professionalism, and compassionate care go hand in hand. Our dedicated faculty members, clinical partners, and extensive resources ensure that our students receive the best possible education and training, enabling them to make a significant impact in the field of cardiovascular health.

I encourage all aspiring students who are passionate about making a difference in the lives of individuals affected by cardiovascular conditions to consider joining our BSCVT program. Together, we can contribute to the advancement of healthcare in Pakistan and beyond.

We look forward to welcoming you to the **Dow University of Health Sciences** family.

Sincerely,

Prof. Dr. Mohammed Saeed Quraishy (T.I.)

Vice Chancellor

Dow University of Health Sciences

Karachi, Pakistan

Message by Program Director



As the Program Director for the **Bachelor in Cardiovascular Technology (BSCVT)** program at **Dow University of Health Sciences (DUHS)**, it is my privilege to introduce you to this dynamic and rewarding field of study.

Cardiovascular diseases continues to be a leading cause of death worldwide, underscoring the critical need for skilled professionals who are well-equipped to support diagnostic, therapeutic, and interventional cardiovascular procedures. At DUHS, we are dedicated to providing an education that prepares students to meet this demand by becoming proficient cardiovascular technologists.

Our **BSCVT program** is meticulously designed to combine in-depth theoretical knowledge with practical training. Throughout the course, students will gain expertise in cutting-edge cardiovascular technologies, including diagnostic imaging, electrocardiography (ECG), echocardiography, and invasive cardiac procedures. With hands-on clinical training, our students develop the skills needed to provide exceptional care to patients and contribute to advancing cardiovascular health.

Our dedicated faculty, state-of-the-art equipment, and partnerships with renowned medical institutions ensure that students receive a comprehensive education, preparing them for diverse roles in the cardiovascular healthcare sector. The program not only focuses on technical expertise but also emphasizes professional ethics, communication skills, and the ability to work as part of an interdisciplinary healthcare team.

As you embark on your journey toward becoming a cardiovascular technologist, I encourage you to explore the opportunities that await you at **Dow University of Health Sciences**. With our world-class facilities, passionate faculty, and rigorous training, we are confident that our program will provide you with the foundation for a successful and fulfilling career in cardiovascular technology.

I look forward to welcoming you to the **BSCVT program** and supporting you as you take the first step toward making a difference in the lives of individuals affected by cardiovascular diseases.

Sincerely,

PROF.DR. M. TARIQ FARMAN

MBBS; FCPS (Cardiology); FESC; FSCAI
Director Cath Lab, DIC
Professor of Cardiology,
Program Director BSCVT Program
Head of the Department of Cardiology, DIMC
Consultant Interventional Cardiologist.
Dow University of Health Sciences,
Karachi.

Program Co-ordinator



Dr. Mishal Zehra

MBBS, FCPS Cardiology (Gold Medalist)

Senior Registrar

Co-ordinator BS-CVT Program

DUHS

Faculty Members

 <p><u>Prof. Dr. Muhammad Tariq Farman</u> MBBS; FCPS (Cardiology); FESC; FSCAI Director Cath Lab, DIC Professor of Cardiology Program Director BSCVT Program Head of the Department of Cardiology, DIMC Consultant Interventional Cardiologist. Dow University of Health Sciences, Karachi</p>	 <p><u>Dr. Riffat Tanveer</u> MBBS, FCPS (Cardiac Surgery) Associate Professor Head of Cardiac Surgery Department Dow University Hospital, DUHS</p>
 <p><u>Dr. Muhammad Hashim</u> MBBS, FCPS Cardiology Assistant Professor Interventional Cardiologist Dow University Hospital, DUHS</p>	 <p><u>Dr. Noman Kakepoto</u> MBBS, FCPS Cardiology Assistant Professor Interventional Cardiologist Dow University Hospital, DUHS</p>
 <p><u>Dr. Asad Ali Mahesar</u> MBBS, FCPS Cardiology Assistant Professor Cardiac Electrophysiologist Fellowship in Adult Echocardiography Dow University Hospital, DUHS</p>	 <p><u>Dr. Muhammad Farhan</u> MBBS, FCPS (Cardiac Surgery) Assistant Professor Head of Cardiac Surgery Department Dow University Hospital, DUHS</p>
 <p><u>Dr. Masroor Hussain Sharfi</u> MBBS, FCPS Paeds Cardiology Associate Professor Paeds Cardiologist Dow University Hospital, DUHS</p>	 <p><u>Dr. M. Navaid Iqbal</u> MBBS, FCPS Cardiology Assistant Professor Interventional Cardiologist Dow University Hospital, DUHS</p>
 <p><u>Dr. Fatima Amin</u> MBBS, FCPS Paeds Cardiology Assistant Professor Paeds Cardiologist Dow University Hospital, DUHS</p>	 <p><u>Dr. Mishal Zehra</u> MBBS, FCPS Cardiology (Gold Medalist) Senior Registrar Co-ordinator BS-CVT Program DUHS</p>
 <p><u>Dr. Riaz Ahmed Qureshi</u> MBBS, MD Cardiology Senior Instructor Consultant Cardiologist Dow University Hospital, DUHS</p>	

Introduction

Cardiovascular diseases (CVDs) have become a leading global health challenge, and with the growing need for specialized healthcare professionals in this field, the **Bachelor in Cardiovascular Technology (BSCVT)** program at **Dow University of Health Sciences (DUHS)** offers an innovative and comprehensive educational pathway for students aspiring to contribute to cardiovascular healthcare.

Dow University of Health Sciences (DUHS) is proud to present the **Bachelor in Cardiovascular Technology (BSCVT)** program. The **BSCVT program** is a four-year undergraduate degree. This program is essential for those who wish to play a pivotal role in the healthcare system, assisting doctors and other medical professionals in diagnosing, treating, and monitoring heart and vascular diseases. This program is designed to equip students with the knowledge, skills, and expertise necessary to become competent cardiovascular technologists, contributing significantly to the healthcare system's diagnosis and treatment of cardiovascular diseases. The BSCVT program at DUHS prepares students to work in the dynamic and critical field of cardiovascular medicine, where they will play an essential role in providing diagnostic, therapeutic, and interventional support in various healthcare settings.

The **BSCVT** program is an academically rigorous and professionally focused program that integrates the latest advancements in cardiovascular medicine with hands-on clinical training. It prepares students to become highly skilled cardiovascular technologists capable of performing essential diagnostic tests and procedures related to heart and vascular health.

Through a carefully curated curriculum, the BSCVT program combines foundational health sciences education with specialized cardiovascular training. Students will study various cardiovascular technologies, from electrocardiography (ECG), Echocardiography, ETT to advanced imaging techniques and invasive cardiovascular procedures such as catheterization and angiography. Additionally, they will learn to assist in emergency care situations and help develop and implement cardiac rehabilitation programs.

If you are passionate about healthcare and eager to contribute to the fight against cardiovascular diseases, this program is the ideal choice for you.

Join us at DUHS, and take the first step toward a rewarding career that directly impacts patient care and outcomes in the dynamic field of cardiovascular health.

Scope of Cardiovascular Technologists in Pakistan

Cardiovascular diseases remain a leading cause of morbidity and mortality in Pakistan. According to the **World Health Organization (WHO)**, CVDs account for a significant proportion of deaths in the country. The burden of heart diseases is expected to rise further due to lifestyle factors such as poor diet, sedentary behavior, high prevalence of smoking, and increasing rates of hypertension and diabetes.

The role of **Cardiovascular Technologists (CVTs)** is expanding rapidly worldwide, and Pakistan is no exception. With the increasing prevalence of cardiovascular diseases (CVDs) and advancements in diagnostic and therapeutic technologies, the demand for skilled cardiovascular professionals has surged. Cardiovascular Technologists in Pakistan are essential in supporting cardiologists and healthcare providers in diagnosing, treating, and managing heart and vascular diseases.

With the increasing recognition of the importance of cardiovascular health, job prospects for cardiovascular technologists are flourishing across Pakistan. Below are some of the key sectors where CVTs can find employment:

- **Hospitals and Medical Centers:** The primary employer of cardiovascular technologists in Pakistan is healthcare institutions, including public and private hospitals who are constantly expanding their cardiovascular departments to meet growing demand. These hospitals offer various roles such as ECG technologists, echocardiography technologists, catheterization lab technologists, and cardiac rehabilitation technologists.
- **Diagnostic Laboratories:** As diagnostic centers and imaging labs become more common in Pakistan, there is a growing demand for CVTs who can operate diagnostic equipment. Cardiovascular technologists are hired to perform diagnostic tests like ECGs, echocardiograms, and stress tests, which are frequently used for early detection of cardiovascular diseases.
- **Cardiac Care Centers:** Specialized heart hospitals and care centers offer opportunities for cardiovascular technologists to assist in heart surgeries, cardiac rehabilitation, and diagnostics.
- **Medical Device and Equipment Companies:** Companies involved in manufacturing and supplying cardiovascular diagnostic equipment such as ECG machines, echocardiograms, and other imaging devices also offer career opportunities. CVTs may work in roles related to the installation, maintenance, and troubleshooting of cardiovascular equipment.
- **Academic and Research Institutions:** As demand for cardiovascular technology professionals grows, academic institutions and research centers hire CVTs as instructors, researchers, and clinical trainers. They can contribute to the development of new diagnostic protocols and technologies for cardiovascular health.
- **Telemedicine and Remote Monitoring Services:** With the rise of telemedicine, some healthcare facilities offer remote cardiovascular monitoring services. CVTs may be involved in providing remote diagnostic services and monitoring patients with cardiovascular conditions, ensuring access to timely care in rural and underserved areas.

To conclude, the role of cardiovascular technologists in Pakistan is vital to the healthcare system. As the need for advanced cardiovascular diagnostics and treatments grows, the demand for skilled CVTs is expected to continue increasing. This field offers diverse career opportunities, excellent job stability, and the chance to make a meaningful impact on public health. With the right training and expertise, cardiovascular technologists in Pakistan can look forward to a fulfilling and rewarding career, while helping address the growing burden of cardiovascular diseases in the country.

Program Overview

1.1. **Program Title:**

Bachelor in Cardiovascular Technology (BSCVT)

1.2. **Degree Awarded:**

Bachelor of Science in Cardiovascular Technology

1.3. **Duration:**

4 years (8 semesters)

1.4. **Credit Hours:**

Minimum 144 credit hours

1.5. **Mode of Study:**

Full-time, on-campus

1.6. **Seat Allocation:**

We are offering a total of **16 seats** on open merit basis per session.

1.7. **Eligibility:**

- HSSC Pre-Medical or equivalent examination (e.g. A-Level, 12th grade etc) duly certified by IBCC with minimum 60% marks.
- Candidate's PRC & Domicile of Sindh.

Program Objectives

The Bachelor in Cardiovascular Technology program aims to:

1. **Develop Professional Skills:** Provide students with the technical and clinical skills necessary for performing diagnostic and therapeutic cardiovascular procedures.
2. **Knowledge of Cardiovascular Anatomy and Physiology:** Develop an in-depth understanding of the human cardiovascular system and the pathophysiology of cardiovascular diseases.
3. **Exposure to Modern Technologies:** Familiarize students with state-of-the-art cardiovascular diagnostic tools, including echocardiography, ECG, and invasive procedures like angiography and catheterization.
4. **Ethical and Professional Practice:** Promote ethical practices in cardiovascular technology and prepare students to function as a key member of healthcare teams, ensuring patient safety and care.
5. **Global Standard of Education:** Ensure that graduates are capable of meeting international healthcare standards and are competitive in the global job market.

Curriculum Structure

The BSCVT program is structured to cover both theoretical knowledge and hands-on practical experience. The program consists of core subjects, practical training, and internships to ensure well-rounded development.

YEAR 1: SEMESTER I

Subject	Course Codes	Semester-I	Credit Hours
Natural Sciences	CHEM 201/ PHYS 201	CHEMISTRY/ PHYSICS	03 2-1
Application Of Information & Comm. Technologies	CS 201	COMPUTER SKILLS	03 2-1
Functional English	ENG-F 211	ENGLISH FOUNDATION	03
Civilization Courses	ISL 201/ ETHIC 201	ISLAMIAT/ETHICS	02
Interdisciplinary Sciences	ANAT 201	ANATOMY	03
	PIO 201	PHYSIOLOGY	03
Total General Education Courses	11		
Interdisciplinary Sciences Course	06		
Total Credit Hours in Semester	17		

YEAR 1: SEMESTER II

Subject	Course Codes	Semester-II	Credit Hours
Ideology and constitution of Pakistan	PAK-STD 202	PAKISTAN STUDIES	02
Social Sciences	PSY 102	PSYCHOLOGY	02
Arts and Humanities	HIS 102	HISTORY	02
Quantitative Reasoning	MATH 212	MATHEMATICS	03
Interdisciplinary Sciences	BCHEM 202	BIOCHEMISTRY	03
	PHARM 202	PHARMACOLOGY	03
Total General Education Courses	9		
Interdisciplinary Sciences Course	06		
Total Credit Hours in Semester	15		

YEAR- 2: SEMESTER III

Subject	Course Codes	Semester-III	Credit Hours
Quantitative Reasoning	BSTAT 323	BIOSTATISTICS	03
Entrepreneurship	ENTP 203	ENTREPRENEURIAL STRATEGY	02
Expository Writing	ENG-W 323	EXPOSITORY WRITING	03
Interdisciplinary Sciences	MICRO 203	MICROBIOLOGY AND INFECTION CONTROL	03
Major Course	CVT - CVA 303	CARDIOVASCULAR ANATOMY	03
	CVT – INTRO 203	INTRODUCTION OF CARDIOVASCULAR SCIENCES	03
	CVT -CP 313	CARDIOVASCULAR SCIENCES- CLINICAL PRACTICUM I	03
Total General Education Courses	08		
Interdisciplinary Sciences Course	03		
Major Course	09		
Total Credit Hours in Semester	20		

YEAR- 2: SEMESTER IV

Subject	Course Codes	Semester-IV	Credit Hours
Civics and community engagement	CIVCM 204	CIVICS AND COMMUNITY ENGAGEMENT	02
Major Course	PS-CVP 304	CARDIOVASCULAR PHYSIOLOGY	03
	PS-RMP 304	RESEARCH METHODS AND PRINCIPLES	03
	CVT –BFM 304	BODY FLUID MEASUREMENT & MANAGEMENT	03
	CVT – ETT 304	EXERCISE TOLERANCE TEST	03
	CVT – HDE 404	HEMODYNAMIC EVALUATION	02
	CVT -CP 424	CARDIOVASCULAR SCIENCES - CLINICAL PRACTICUM II	03
Total General Education Courses	02		
Major Course	17		
Total Credit Hours in Semester	19		

YEAR- 3: SEMESTER V

Subject	Course Codes	Semester-V	Credit Hours
Minor Course	CVT – PPC 305	PRINCIPAL OF PATIENTS CARE	03
	CVT – PFI 405	PROCEDURES FOR INPATIENTS	02
Major Course	CVT – EMG 405	CARDIOVASCULAR EMERGENCIES	03
	CVT – ECG 405	ELECTROCARDIOGRAPHY	03
	CVT – CPP 405	CARDIAC PATHOPHYSIOLOGY IN PEDIATRICS	03
	CVT – STC 405	STRESS CARDIOLOGY	02
	CVT -CP 435	CARDIOVASCULAR SCIENCES - CLINICAL PRACTICUM III	03
Minor Course	05		
Major Course	14		
Total Credit Hours in Semester	19		

YEAR- 3: SEMESTER VI

Subject	Course Codes	Semester-VI	Credit Hours
Minor Course	CVT – POR 306	PRINCIPAL OF RADIATION	03
	CVT - UST 306	ULTRASOUND TECHNIQUES	02
Major Course	CVT – ICM 306	INVASIVE CARDIAC METHODOLOGIES	02
	CVT - DUS 406	DOPPLER ULTRASOUND TECHNIQUES	02
	CVT – PCC 406	PRINCIPLES OF CRITICAL CARE	03
	CVT – VSD 406	VASCULAR SYSTEM AND DISEASES	03
	CVT – HEM 306	BASIC HEMATOLOGY	02
	CVT -CP 446	CARDIOVASCULAR SCIENCES - CLINICAL PRACTICUM IV	03
Minor Course	05		
Major Course	15		
Total Credit Hours in Semester	20		

YEAR-4: SEMESTER VII

Subject	Course Codes	Semester-VII	Credit Hours
Minor Course	CVT – QRM 407	QUALITY AND RISK MANAGEMENT	02
	CVT – VUS 417	VASCULAR ULTRASOUND – I	02
Major Course	CVT – CCL 417	CARDIAC CATHETERIZATION - I	03
	CVT – ECHO 417	ECHOCARDIOGRAPHY – I	03
	CVT - CP 457	CARDIOVASCULAR SCIENCES-CLINICAL PRACTICUM V	03
Field experience/ Internship	PS-INTE 507	INTERNSHIP	03
Minor Course	04		
Major Course	09		
Field experience/ Internship	03		
Total Credit Hours in Semester	16		

YEAR-4: SEMESTER VIII

Subject	Course Codes	Semester-VIII	Credit Hours
Minor Course	CVT – IMG 408	INVASIVE IMAGING	03
	CVT – CCM 408	CARDIAC CARE UNIT MANAGEMENT	03
Major Course	CVT – CIP 428	CARDIAC CATHETERIZATION - II	03
	CVT – ECHO 428	ECHOCARDIOGRAPHY – II	03
	CVT - CP 468	CARDIOVASCULAR SCIENCES-CLINICAL PRACTICUM VI	03
Capstone Project	PS-RP 408	RESEARCH PROJECT	03
Minor Course	06		
Major Course	09		
Capstone Project	03		
Total Credit Hours in Semester	18		

12 GEC COURSES = 30 CREDIT HOURS

5 INTERDISCIPLINARY SCIENCES = 15 CREDITS HOURS

8 MINOR (TECHNOLOGY RELATED) = 20 CREDIT HOURS

29 MAJOR (TECHNOLOGY RELATED) = 73 CREDITS HOURS

1 FIELD EXPERIENCE/ INTERNSHIP= 3 CREDIT HOURS

1 CAPSTONE/RESEARCH PROJECT = 3 CREDIT HOURS

TOTAL = 144 CREDITS HOURS

Fee Structure

SESSION 2024-2025

Admission Fee (Once only)	45,000
Tuition Fee (Yearly)	2,00,000
Student Activity Fee (Yearly)	10,000
Library Charges (Yearly)	10,000
Document Verification Charge (Once only)	2,500
Total	2,67,500

Transport Fee (Optional) Rs. 43,000

RULES FOR THE PAYMENT OF FEE

1. Fees of succeeding years (2nd Year to Final Year) are to be paid within ONE MONTH of issuance of fee vouchers or within the due date provided.
2. In case the fee for succeeding year (2nd Year to Final Year) is not submitted during the given specified time, late payment charges will be charged as follows:

First Month (After Lapse of First Month)	2.5%
Second Month	5%
Third Month	7.5%
Fourth Month	10%

After four months of non-payment, the seat is liable to be cancelled and student will not be allowed to appear in any examination

3. Fee of all categories shall be increased by 10% every year.
4. Fee deposited is refundable as per the Refund Policy guidelines of the DUHS.
5. Taxes will be applied as per the FBR and Government rules.
6. Hostel and Transport fee will be valid till the December of every year
7. Amounts stated in the fee vouchers are excluded of all Bank charges .
8. The Fee Structure may be revised by the university at any time during the course of the study, due to unavoidable circumstances
9. Associated fees will be charged as per fee structure.

Admission Process

1. Application Submission:

- The admission form can be accessed through the official DUHS website or campus.
- www.duhs.edu.pk

2. Entrance Test:

- A written test will be conducted covering subjects like biology, chemistry, physics, and English.

3. Interview:

- Shortlisted candidates will be invited for an interview.

4. Final Selection:

- Based on test results, interview performance, and academic credentials

Why Choose DUHS for BSCVT?

1. **Accredited Program:** The BSCVT program is accredited by HEC and follows international standards.
2. **Experienced Faculty:** The program is delivered by highly qualified faculty with specialized experience in cardiovascular medicine and technology.
3. **State-of-the-art Facilities:** Students have access to modern cardiovascular diagnostic equipment and training facilities.
4. **Comprehensive Training:** DUHS offers both theoretical and practical training, preparing students for the real-world challenges of cardiovascular healthcare.

Our Services



DOW UNIVERSITY HOSPITAL DOW INSTITUTE OF CARDIOLOGY

24 Hours
Complete
CARDIAC
SERVICES

CLINICAL SERVICES

We have two state of the art Cath Labs and a state of the art operation theater complex according to international standards. We have well experienced and renowned Interventional Cardiologists and Cardiac Surgeons providing care to the community. Currently we are offering these services within the Ojha campus:

Appointment Time: 9:00 am to 3:00 pm

Make your appointment at

Main OPD, Institute of Cardiology

Ojha Campus, Dow University of Health Sciences,

Main Suparco Road, Karachi

Contact: 021-38771111 Ext. 2506 (info), 3356 (appointment)

Email: dow.cardiology@duhs.edu.pk

- 24 hours cardiac emergency
- In-patient and Coronary Care Unit
- Coronary Angiography and Angioplasty
- Primary and Elective PCI
- Right Heart Catheterization
- Pericardiocentesis
- Cardiac Pacing
- Exercise Tolerance Test (ETT)
- EP & arrhythmia services
- Dobutamine Stress Echo (DSE)
- Transthoracic and Transesophageal Echo
- Holter Monitoring
- Ambulatory BP monitoring
- Cardiac screening clinic
- Consultants Clinic
- Executive Clinic
- Pacemaker Clinic
- Cardiac Surgery and CABG
- Post graduate and undergraduate Training



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[DUHS](https://www.youtube.com/duhs)

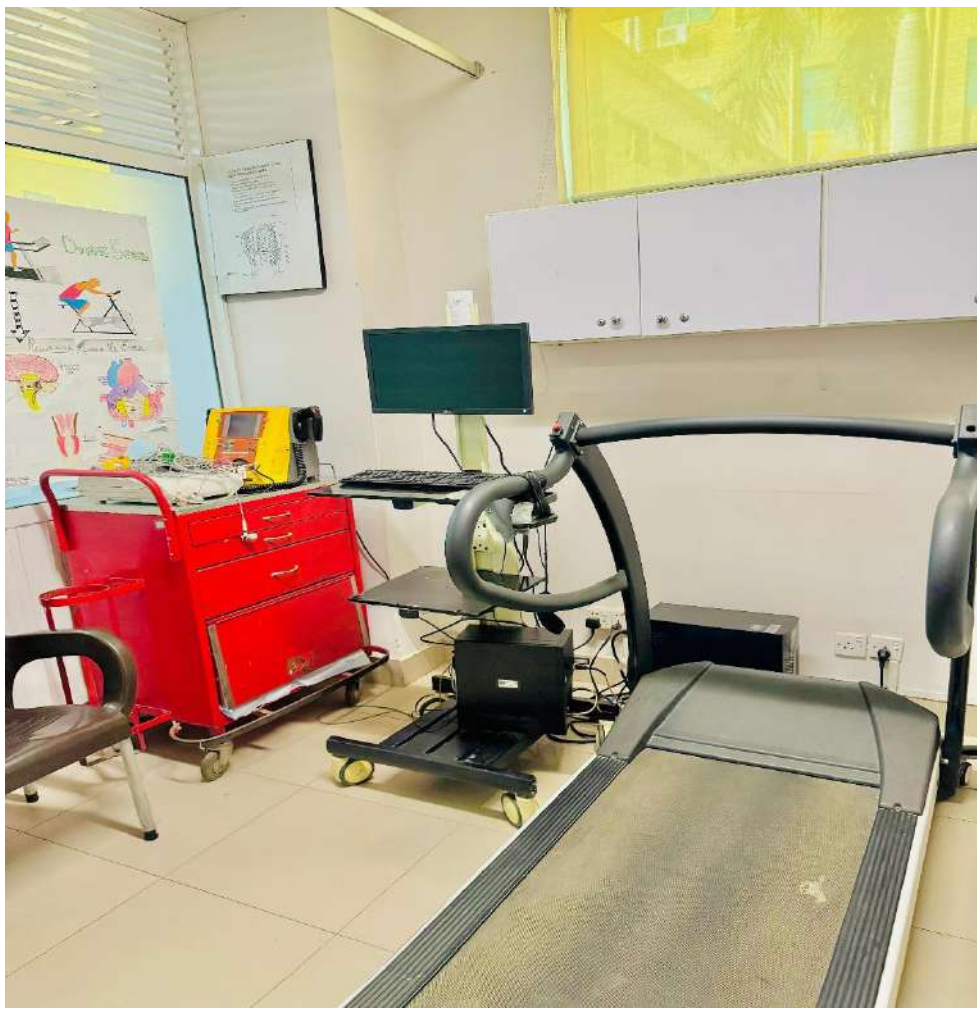
Cardiac Catheterization Lab



Echocardiography Lab



ETT Lab



Cardiac CT Lab



In-Patient Services



Lectures and Seminar Room



Events

CME lecture on Heart Health in Women in association with Go Red for Women AHA



World Heart Day



Bikeathon



ECG Workshop



Health Expo Exhibition



This is an exciting opportunity to embark on a rewarding career in one of the most crucial fields of modern healthcare. The Bachelor in Cardiovascular Technology program at DUHS offers the perfect foundation for students passionate about advancing cardiovascular health and making a difference in the lives of patients. Join us today!

Contact Information

Dow University of Health Sciences

Dow Institute of Cardiology

Website: www.duhs.edu.pk

Email: admissions@duhs.edu.pk