



DOW UNIVERSITY OF HEALTH SCIENCES

SCHOOL OF POSTGRADUATE STUDIES

PROGRAM SPECIFICATION – PHD IN MEDICAL TECHNOLOGY

Introduction of Institute & Program

Dow University of Health Sciences (DUHS) is one of the flag bearers of health science education and research in Pakistan. Manifested from the mission of the University, DUHS is continuously upgrading its research themes for MPhil in the progressively evolving field of Medical Technology.

Medical Technology encompasses a broad allied health discipline and incorporates study of advancing technologies in healthcare i.e. devices to the healthcare systems for diagnosis, patient care, treatment and improvement of a person's health. Medical Technology is a vital part of the entire Health Care System. This professional field comprises the challenges and rewards of medicine and surgery and deals with the technical aspect of the same.

The program course work is carefully sculpted to equip the PhD students to develop sound understanding of the basic to advance concepts of wide range of disciplines most notably, progress in medical technology research, functional materials in health technology, clinical optics and biomedical photonics, integration in cardiopulmonary bypass and extracorporeal life support, bioinformatics and artificial intelligence tools.

The research themes of PhD in Medical Technology at DUHS are mostly focused on innovations leading to the technological solutions of modern day local and international healthcare problems particularly point-of-care testing, automations, health technologies, minimally invasive surgical and medical technologies, and diagnostic accuracy. In addition, an intrinsic mechanism has been set out to ensure smooth and timely completion of PhD in Medical Technology at DUHS.

Course Title (As approved by PM&DC/HEC)

PhD Medical Technology

Course Duration

3-8 years



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Type of Study	Full time
Study System	Semester system
Total Credit Hours	48
Credit Hours Distribution –Semester Wise	Course work =18 Thesis = 30
Study Hours Distribution	Study per Semester = 16 weeks Examination = 2 weeks Semester Break = 2 weeks Working Days = 8:30am - 3:00pm (except Friday)
Teaching Hours Distribution	Lecture hours/ Facilitation / Self Directed Studies/ Lab training
Modules Detail with Credit Hours	Semester 1 (General): covering Advanced concepts in medical technology, progress in medical technology research, ethics in medical technology research (List attached as annexure). Semester 2 (Subject Specific): Constituted by 800 level courses Elective Course I Elective Course II Elective Course III (Annexure attached at the end) Each course holds 3 credit hours
Assessment of Student	Continuous Internal Assessment = 30 % Final Examination = 70% Total = 100%
Teaching Institution	School of Postgraduate Studies
Degree Awarding Institution	Dow University of Health Sciences, Karachi



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List of Compulsory and Optional may be mentioned below:

S.No.	Course Codes	Course Title
Semester I Core Courses (Major Courses)		
1.	PHMT-AMT 831	Advanced Concepts in Medical Technology
2.	PHMT-IRD 831	Progress in Medical Technology Research
3.	PHMT-EMR 811	Ethics in Medical Technology Research
Semester II : Elective Courses (Specialized track courses)		
1.	PHMT-BINF 802	Bioinformatics and Computational Tools in Perfusion Research
2.	PHMT-CPTR 812	Advanced Cardiovascular Pharmacology and Translational Research in Cardiopulmonary Bypass
3.	PHMT-AIP 812	Artificial Intelligence and Predictive Analytics in Perfusion
4.	PHMT-MGCD 802	Molecular and Genetic Basis of Cardiovascular Diseases
5.	PHMT-IELS 832	Integration in Cardiopulmonary Bypass and Extracorporeal Life Support
6.	PHMT-NICU 812	Innovations and Advanced Clinical Strategies in Neonatal Intensive Care
7.	PHMT-RDIC 822	Advanced Respiratory Diagnostics and Pulmonary Rehabilitation in the Intensive Care Unit (ICU)
8.	PHMT-ARMT 802	Advanced Respiratory Medicine and Technology
9.	PHMT-ISIC 812	Infection Prevention and Control Practices in ICU
10.	PHOPT-AMNV 802	Advanced Molecular Neurobiology of Vision
11.	PHOPT-CLOP 802	Clinical Optometry
12.	PHOPT-AODT-903	Advanced Ocular Disease and Therapeutics
13.	PHOPT-COBP 802	Clinical Optics and Biomedical Photonics



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S.No.	Course Codes	Course Title
14.	PHMT-MCN 812	Advanced Molecular and Cellular Neurobiology
15.	PHMT-CSN 802	Computational and Systems Neuroscience
16.	PHMT-CNN 812	Clinical Neuroscience and Neuropathology
17.	PHMT-NTN 802	Emerging Neurotherapies and Translational Neuroscience
18.	PHMT-LHMS 812	Clinical Laboratory Leadership and Health Management Systems
19.	PHMT-DHCT 832	Diagnostic Histopathology and Cytological Techniques
20.	PHMT-DICC 832	Diagnostic Innovation Through Advanced Clinical Chemistry
21.	PHMT-IHTS 832	Integrated Hematopathology and Transfusion Science
22.	PHMT-MDTG 832	Molecular Diagnostics and Translational Genomics
23.	PHMT-TIGD 832	Translational Microbial Immunology and Genomic Diagnostics
24.	PHMT-APTR 812	Advanced Pharmacology and Translational Research in Surgery
25.	PHMT-BDSTP 802	Biomedical Device Technology in Surgical Practice
26.	PHMT-MIST 822	Minimally Invasive Surgical Technology
27.	PHMT-FMHT 802	Functional Materials in Health Technology