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MPHIL IN MEDICAL TECHNOLOGY

PROGRAM SPECIFICATION

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 MPhil students to develop sound understanding of the basic to advance concepts of wide range of disciplines most notably, artificial intelligence and health informatics, applied physics, blood banking, neuro-ophthalmology,neurodiagnostics,cytogenetics, principles of robotic surgery, advances in diagnostic and therapeutic technologies and bioethics and biosafety. The research themes of MPhil 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, robotic technologies, minimally invasive surgical and medical technologies,

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	and diagnostic accuracy. In addition, an intrinsic mechanism has been set out to ensure smooth and timely completion of MPhil in Medical Technology at DUHS.
Course Title (HEC)	MPhil
Course Duration	2-3 Years
Type of Study	Full time
Study System	Semesters system
Total Credit Hours	Total C.H. 30
Credit Hours Distribution –Semester Wise	12 Credit hours each for 2 semesters of course work, 06 credit hours for thesis
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 Research Methodology, Biosafety and Bioethics, Biostatistics and data analysis and research specific elective course (List attached as annexure). **Semester 2 (Subject Specific):** Constituted by 700 level courses Advanced Quantitative Tools 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 = 50 % Final Examination = 50% Total = 100%
Teaching Institution	School of Postgraduate Studies
Degree Awarding Institution	Dow University of Health Sciences, Karachi
Eligibility /Admission Criteria	• See Relevant Section of DUHS Website

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Fee Structure	• See Relevant Section of DUHS Website

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ANNEXURE I

Semester breakup (MS/MPhil)

Semester 1

Course Title	Credit hours
Biostatistics and data analysis	3
Research methodology	3
Biosafety and Bioethics	3
Elective Course I	3
Total:	12

Semester 2

Course Title	Credit hours
Advanced quantitative tools	3
Elective Course II	3
Elective Course III	3
Elective Course IV	3
Total:	12

Semester 3

Course Title	Credit hours
Thesis	6

Semester 4

Course Title	Credit hours
Thesis	6

(Verified by HOD/Registrar)

List of Compulsory and Optional may be mentioned below:

S.No.		Course Codes	Course Title
Core Courses (Major Courses)			
1.	MPMT(BD)-721		Biostatistics and data analysis
2.	MPMT(RM)-731		Research methodology
3.	MPMT (BEth)-701		Biosafety and Bioethics
4.	MPMT(AQT)-732		Advanced quantitative tools
Semester I : Elective Courses (Minor courses)			
1.	Elective Course I	MPMT- (APCS) 721	Advanced Anatomy & Physiology of Cardiovascular System
2.	Elective Course I	MPMT - (ACP) 721	Advanced Cardiovascular Pathophysiology
3.	Elective Course I	MPMT - (NIOP) 721	Neuro-ophthalmology and investigation
4.	Elective Course I	MPMT - (POPT) 721	Pediatric ophthalmic technology
5.	Elective Course I	MPMT - (LVOP) 721	Low vision / geriatric ophthalmology system
6.	Elective Course I	MPMT (DMS)-731	Respiratory therapist as a disease management specialist
7.	Elective Course I	MPMT (QIRC)721	Quality Improvement in Delivering Respiratory Care
8.	Elective Course I	MPMT(TAD)_711.	Technological advancements in Diagnostics

9.	Elective Course I	MPMT(PICS)_721	Principles of infection control in Surgical Suite
10.	Elective Course I	MPMT(AP)_731	Applied physics
11.	Elective Course I	MPMT(AI)_701	Artificial Intelligence and health informatics
12.	Elective Course I	MPMT(NeurBio)_711	Neurobiology
13.	Elective Course I	MPMT(CC)-731	Clinical Chemsitry
14.	Elective Course I	MPMT(IHBB)-731	Immunohematology and blood banking
15.	Elective Course I	MPMT(HC)-731	Hematology and coagulation
16.	Elective Course I	MPMT(MolD)-731	Molecular diagnostics
17.	Elective Course I	MPMT(OCLS)-721	Orientation to CLS
Semester II :Elective Courses (Minor Courses)			
1.	Elective Course II	MPMT -(CPBA) 732	Cardiopulmonary Bypass in Adults
2.	Elective Course III	MPMT- (ECMOA) 712	Extracorporeal Membrane oxygenation in Adults (ECMO)
3.	Elective Course IV	MPMT - (CPBP) 712	Cardiopulmonary Bypass in Paedriatrics
4.	Elective Course III	MPMT- (ECMOC) 722	Extracorporeal Membrane Oxygenation in Infants and Children

5.	Elective Course IV	MPMT - (CPBSC) - 712	Cardiopulmonary Bypass in Specialized cases
6.	Elective Course II	MPMT - (CLOP) 732	Contact lenses
7.	Elective Course III	MPMT - (SVOP) 722	Sports vision and occupational ophthalmology
8.	Elective Course IV	MPMT - (AODI) 731	Advanced ocular diagnostics and investigation
9.	Elective Course II	MPMT (ACCS)-732	Adult Critical Care Specialist
10.	Elective Course III	MPMT (PACM)-722	Principles of Anaesthesia Care and Management
11.	Elective Course IV	MSMT(AIHC)-712	Artificial Intelligence and Health Care informatics in Respiratory Care
12.	Elective Course III	MPMT(HQM)_722	Healthcare Quality Management
13.	Elective Course III	MPMT(TAT)_722	Technological advancements in Therapeutics
14.	Elective Course II	MPMT(ETS)_702	Electronics and Technology in operating suite
15.	Elective Course IV	MPMT(ROB)_712	Principles of robotic surgery
16.	Elective Course IV	MPMT(StR)_712	Principles of stereotactic radiosurgery
17.	Elective Course II	MPMT(CogN)-712	Cognitive Neuroscience
18.	Elective Course III	MPMT(MolN)-702	Molecular Neuroscience

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19.	Elective Course II	MPMT(ND)-722	Neurodiagnostics
20.	Elective Course IV	MPMT(NP)-722	Neuropathology
21.	Elective Course II	MPMT(CAC)-712	Cytogenetics and cytology
22.	Elective Course III	MPMT(HISTO)-731	Histopathology
23.	Elective Course IV	MPMT(MI)-731	Microbiology and Immunology
24.	Elective Course II	MPMT(MolD)-731	Molecular diagnostics