



LUMS | Learning Institute

DIPLOMA IN DIGITAL HEALTH

Course Outline

Empowering educators, transforming healthcare.

PROGRAM OVERVIEW

Digital technologies are transforming healthcare, creating new opportunities to improve access, care delivery, and health outcomes. The **Diploma in Digital Health at LUMS** is a 1-year hybrid program designed for health professionals to develop practical skills in telehealth, electronic health records, data governance, AI, and other digital health innovations.

Following the internationally recognized **DECODE framework**, the program combines theoretical knowledge with hands-on learning, enabling participants to lead digital health initiatives, evaluate digital interventions, and contribute to more data-driven and equitable healthcare in Pakistan.

Duration: 1 year

Credit Hours: 18

Mode: Hybrid (both in-person and online participation is possible)

Target Audience: Medical doctors and health professionals practicing in Pakistan

Prerequisites: Active medical license in Pakistan; basic computer literacy

Weekly Commitment: Approximately 6–8 hours per week

PROGRAM OBJECTIVES

By the end of this diploma program, participants will be able to:

- Apply digital health technologies ethically and effectively within the Pakistani healthcare context
- Implement and evaluate telehealth services appropriate for their practice setting
- Utilize health information systems and AI tools to improve patient care and clinical workflows
- Analyze health data to support clinical decision-making and public health initiatives
- Critically evaluate and implement AI and data science solutions in clinical practice
- Develop a practical digital health implementation plan for their clinical environment
- Demonstrate leadership and change management competencies essential for digital health adoption

PROGRAM STRUCTURE

The program's structure is based on the four domains of the Digital Health Competencies in Medical Education (DECODE) framework, with each domain covered in a separate module. DECODE, developed through an international collaboration of 211 experts from 79 countries and territories, is an evidence-informed, consensus-guided, adaptable digital health competencies framework for designing and developing digital health curricula in medical institutions globally.

Course 1: Overview & Preparing for Digital Health

1st Semester | 2 Credit Hours

1.1 The Digital Revolution in Healthcare

- Digital health and its role in transforming healthcare
- Emerging innovations shaping healthcare delivery
- AI as a tool to augment healthcare professionals

1.2 Preparing for Digital Health Implementation

- Assessing digital health readiness in clinical settings
- Change management and resource optimization
- Measuring the impact of digital health interventions

1.3 Digital Health in Pakistan's Context:

- Digital health landscape and ecosystem in Pakistan
- Current challenges and opportunities in Pakistan's digital health space
- Data protection laws and implementation in Pakistani healthcare settings

Practical Components:

- AI literacy assessment and practical simulations
- AI case studies in healthcare

Assignment: Develop and present AI integration strategies in clinical settings.

Course 2:

Patient & Population Digital Health

1st Semester | 2 + 1 Credit Hours

2.1 Digital health literacy

- Assess digital health literacy and address digital inequalities.
- Develop culturally appropriate materials and guide patients toward trustworthy digital tools.

2.2 Telehealth

- Telehealth skills, protocols, and requirements.
- Scope and limitations in Pakistan.
- AI applications in telehealth.

2.3 Sensors, wearables, and internet of medical things

- Introduction and applications of IoMT.
- Patient monitoring and data interpretation.
- Implementation challenges in Pakistan.

2.4 Internet-based health interventions

- Types and applications of online interventions.
- Implementation and effectiveness assessment.

2.5 Digital determinants of health

- Access, literacy, affordability, and infrastructure.
- Impact on health equity in Pakistan.
- Strategies to bridge the digital divide.
- Exercise: Analyse urban–rural cases and propose equity-focused solutions.

2.6 Computational thinking in medicine

- Problem-solving, pattern recognition, and algorithms.
- Data-driven decision-making and task automation.

Practical Components:

- Telehealth simulations & Health app evaluation
- Digital literacy material design & Patient and community engagement

Assignment: Develop a telehealth implementation protocol for a specific patient population in Pakistan, incorporating appropriate digital tools and AI assistance

Course 3:

Health Information Systems & Human Centered Design

1st and 2nd Semester | 3 + 1 Credit Hours

3.1 Digital Determinants of Health

- Define digital determinants (access, literacy, affordability, infrastructure).
- Examine their impact on health equity in Pakistan.
- Strategies to bridge the digital divide in patient access and clinician workflows.
- Exercise: Analyse urban–rural cases and propose solutions

3.2 Foundation and principles of health information systems

- Types, components, and architecture of health information systems, including EHRs.
- Security, efficiency, and implementation considerations.
- Challenges of EHR adoption in Pakistan.

3.3 Electronic health records

- Effective use of EHRs and electronic prescribing.
- Clinical documentation standards.
- AI-supported documentation and coding.

3.4 Human-centered design in digital health

- Designing digital health interventions around user needs and workflows.
- Addressing digital access and social determinants.
- Human-centered AI applications in Pakistan.

3.5 Implementation & Evaluation of Digital Health Systems

- Evaluating effectiveness, equity, usability, and safety.
- Measuring adoption, efficiency, and user satisfaction.
- Using clinician and patient feedback to improve digital tools.

Practical Components:

- Capstone: Evaluate an existing digital health tool in Pakistan and propose redesign and implementation recommendations.
- Teams may evaluate an EHR module, telehealth platform, digital therapeutic, or mobile health application.

Course 4:

Health Data Science

2nd Semester | 2 + 1 Credit Hours

4.1 Public Health Informatics

- Applications in disease surveillance and population health.
- Data-driven public health interventions in Pakistan.

4.2 Artificial Intelligence in Healthcare

- AI and machine learning fundamentals for clinicians.
- Clinical applications and evaluation of AI tools.
- AI integration into clinical workflows.

4.3 Digital Diagnostics

- Evaluation and implementation of digital diagnostic tools.
- AI-powered diagnostics and clinical decision-making.

4.4 Large Language Models in Clinical Practice

- Capabilities and limitations of GenAI in healthcare.
- Prompt engineering and safe evaluation of AI outputs.
- Integration into clinical documentation.

4.5 AI Implementation in Clinical Workflows

- Identifying AI integration points in clinical pathways.
- Change management and measuring clinical impact.
- Case studies from relevant healthcare settings.

4.6 Responsible AI in Healthcare

- Explainable AI and bias mitigation.
- AI governance and regulatory considerations in Pakistan.

4.7 Precision Medicine

- Integration of genomic and clinical data.
- Personalized treatment and AI applications.
- Implementation considerations for Pakistan.

Practical Components

- Basic Python/R and data analysis sessions.
- Data-driven decision-making exercises.
- AI tool evaluation and implementation planning.
- Generative AI prompting for clinical scenarios.
- **Capstone Project:** Develop a comprehensive digital health implementation plan integrating DECODE domains, AI, and data science.

Course 5:

Professionalism, Ethics, & Digital Security

2nd Semester | 2 Credit Hours

5.1 Professionalism, ethical, legal, and regulatory considerations in digital health

- Professional standards for digital health practice
- Human subjects research and the Belmont report
- Institutional Review Boards
- Ethical frameworks for digital health: balancing innovation with patient protection
- Regulatory challenges in emerging economies: lessons from global south
- Data sovereignty and cross-border health data sharing implications
- HIPAA principles and their relevance to Pakistani context
- Case studies

5.2 Digital identity, safety, and security in clinical practice

- Maintaining an appropriate professional digital identity
- Cybersecurity fundamentals for healthcare professionals
- Practical protocols for patient data protection in resource-limited settings
- Recognizing and responding to cyber-risks and threats
- Balancing accessibility with security: Data security protocols for AI applications in healthcare

5.3 Data governance and data management

- Healthcare data governance frameworks
- Data quality assessment and improvement
- Lifecycle management of health data
- Preparing clinical data for AI applications

LEARNING OUTCOMES

The curriculum addresses all 33 mandatory learning outcomes from the DECODE framework and incorporates relevant discretionary learning outcomes based on the Pakistani healthcare context, with particular emphasis on AI and data science applications.

Knowledge-Based Learning Outcomes:

- Explain ethical, legal, and professional standards for digital health practice
- Describe telehealth modalities and their applications in diverse clinical settings
- Identify essential components of electronic health records and clinical information systems
- Explain the principles of AI and machine learning in healthcare applications
- Describe how digital health tools can address healthcare challenges in Pakistan

Skill-Based Learning Outcomes:

- Conduct effective telehealth consultations following best practice guidelines
- Evaluate and select appropriate digital health tools for specific clinical scenarios
- Navigate and utilize electronic health records efficiently and securely
- Apply computational thinking to solve clinical problems
- Implement appropriate AI tools within clinical workflows

Behavior-Based Learning Outcomes:

- Maintain appropriate professional digital identity across all platforms
- Advocate for digital health literacy and equitable access in patient populations
- Practice secure data management in accordance with governance standards
- Demonstrate responsible use of AI tools in clinical decision-making
- Engage in continuous learning about emerging digital health technologies

Teaching & Assessment Methodologies

- **Interactive Learning:** Expert-led sessions, case-based discussions, and problem-solving activities
- **Practical Application:** Hands-on workshops, simulations, and real-world exercises
- **Collaborative Learning:** Group projects, peer feedback, and community of practice
- **Industry Engagement:** Field visits, guest lectures, and mentorship from digital health leaders
- **Assessment:** Module assignments (40%), participation (20%), capstone project (40%)

Course	Credit Hours	Semester
Overview & Preparing for Digital Health	2	1
Patient & Population Digital Health	2 + 1	1
Health Information Systems	3 + 1	1 and 2
Health Data Science	2 + 1	2
Professionalism, Ethics, & Digital Security	2	2
Capstone Project	2 + 2	1 and 2
Total = 18		

Please note that LUMS Learning Institute reserves the right to make amendments to the course outline as deemed necessary. Any changes will be communicated to all students in advance, and an updated outline will be provided to ensure a seamless learning experience. We appreciate your understanding and flexibility as we strive to deliver the most relevant and impactful program.