SCHOOL OF DIGITAL HEALTH SCIENCES & TECHNOLOGY

Fellowship in Digital Hospital Transformation

Academic regulations for fellowship programmes

1. **DEFINITION**
   Fellowship: A fellowship is an advanced, structured programme focused on developing specialized competencies after the completion of a qualifying degree or equivalent experience. It offers structured learning and practical experience in a focused area. The purpose of the fellowship is to develop advanced knowledge, strengthen specialized skills, and prepare participants for professional growth within their chosen field.

2. **AIMS AND OBJECTIVES**
   The aim of the program is to provide program nurtures graduate and postgraduate candidates, building their expertise and skills to drive career excellence and impact in their chosen field.
   Full-Time Candidate: A full-time candidate is an individual who is enrolled exclusively in the fellowship program and is not engaged in any other professional, academic or employment obligations during the training period. These candidates are required to dedicate their time and effort to the structured fellowship programme, meeting the assigned outcomes through full-time participation that ensures immersive training and continuous engagement in all programme activities, including assigned duties, learning sessions, and assessments. Stipends for full-time fellowship candidates will be awarded as per MRV policy.

   Internal Candidate: An internal candidate is an individual currently employed by MRV or its affiliated institutes who wish to enhance their skills through the fellowship during their tenure at the institution. This includes faculty, residents, or staff. Internal candidates are not eligible for a stipend. Applications are subject to institutional approval.

   External Candidate: An external candidate is someone not employed by MRV or its affiliated hospitals and institutes at the time of applying for the fellowship. They may come from other academic institutions, healthcare organizations, or private practice. External candidates are required to complete all fellowship requirements as per MRV guidelines. No stipend will be provided.

   Sponsored Candidate: A sponsored candidate is nominated and financially supported by a recognized institution, organization, or employer such as a government body, healthcare institution, academic organization, or industry partner to pursue a fellowship at MRV. The sponsor typically covers fees or other program-related costs and may require the candidate to fulfill certain obligations, if any, upon completion as required by the sponsor. Employees sponsored by organizations must provide a formal no-objection certificate. Sponsored candidates are not eligible for a stipend.

3. PREREQUISITES

Criteria	Details
Eligibility	To be eligible for admission into the fellowship program at MRV, candidates must meet the following criteria: • Hold a recognized graduate or postgraduate degree with a completion certificate. • The fellowship must align with the candidate's prior qualifications and may require professional registrations. • Detailed eligibility criteria for ach fellowship, including approved qualifications are available on the MRV website.
Duration	• Undergraduate Degrees – Any recognized undergraduate degree – 12 months • Postgraduate Degrees – Any recognized undergraduate degree – 6 months • Super specialty Degrees – Any recognized speciality or advanced degree – 3 months * Duration for any category may be adjusted based on program requirements, as recommended by the Selection Committee.
Mode of Study	Theoretical, Lab-based Development, Simulation Workshops, Clinical Scenario Building, Capstone Project, Practical, Skill, Case-based

4. SELECTION AND COMMENCEMENT OF FELLOWSHIP

Fellowship Committee: The Fellowship Committee is established to uphold principles of transparency, fairness, and meritocracy in the selection process for the MRV Fellowship Program.

Composition of Fellowship Selection Committee

Sr. No.	Role/Position	Description / Designation
1	Chairperson	The Dean of the respective colleges and Schools of Eminence at MRV
2	Subject Expert	A Professor or Associate Professor from the concerned colleges and Schools of Eminence, MRV
3	Guide / Co-Guide	A Professor, Associate Professor, or Assistant Professor from the concerned colleges and Schools of Eminence, MRV
4	Convener	The Fellowship Coordinator of MRV
5	Ex officio Members	The Registrar and the Controller of Examinations,

		MRV

Duties of the Fellowship Selection Committee
- Ensure that the MRV fellowship program commences twice a year in accordance with the academic calendar issued by the university.
- Oversee the preparation and communication of the program schedule, including application deadlines, interview dates, and the start of training through the MRV website and relevant academic departments.
- Thoroughly evaluate all applications to ensure candidates meet the minimum requirements for completion.
- Assess academic credentials, prior qualifications, and overall suitability for the fellowship program.
- Conduct interviews for shortlisted candidates to evaluate knowledge, skills, and overall preparedness.
- Recommend a final list of eligible candidates for approval by the Vice-Chancellor based on the evaluation and interview outcomes.
- Oversee all aspects of the fellowship program from scheduling, implementation, to completion.

5. **FEE STRUCTURE**
   Program Fees: The basic fee structures for each fellowship program are available on the respective program on the MRV website.

6. **PROCEDURE FOR SELECTION AND ADMISSION**
   - **Eligibility Check:** Verify that applicants meet the basic eligibility criteria, including academic qualifications, professional experience, and relevant skills.
   - **Document Review:** The Selection Committee reviews all applications for completeness and ensures they satisfy the program's eligibility requirements.
   - **Personal or Virtual Interviews:** Shortlisted candidates may be invited for interviews, either in person or virtually. This allows the Committee to assess communication skills, motivation, and overall suitability for the fellowship.
   - **Merit-Based Selection:** The Committee selects the most qualified candidates based on a combination of academic performance, professional experience, interview performance, and alignment of the applicant's goals with the objectives of the fellowship.

7. **ALLOTMENT OF FELLOWSHIP GUIDE**
   Assignment of Guides: The allotment of fellowship Guides shall be undertaken by the Selection Committee, ensuring that only eligible and approved faculty members are assigned as Guides or mentors.

   Criteria for Allotment are based on:
   - Alignment of the fellow's area of interest with the Guide's specialization
   - Availability and consent of the Guide
   - Existing rotation or merit-based preferences as determined by the Committee

   Role and Responsibilities of the Guide:
   - Mentoring the fellow to acquire required skills and academic knowledge
   - Providing guidance and support to ensure progress throughout the fellowship

- Conducting regular evaluations and offering academic and professional advice and submit periodic report to the Fellowship coordinator
- Supporting the fellow in meeting program requirements and objectives

External Collaborators: External collaborators from recognized institution may serve as fellowship co-Guides in conjunction with a Guide from MRV.

Change of Guide: Fellows may request a change of Guide, subject to approval by the Selection Committee.

8. FELLOWSHIP PROGRAM DESIGN

The fellowship program is designed to provide a structured and comprehensive learning experience that develops relevant skills, knowledge, and professional competencies. Upon completion, they should demonstrate proficiency in core skills, apply their knowledge effectively in professional settings, maintain professional standards, and document their progress.

Logbook Maintenance: Fellows must maintain a logbook throughout the program. The required entries may vary depending on the fellowship. The logbook will be reviewed and evaluated on a daily or weekly basis by the assigned Guide. Regular face-to-face feedback sessions with the Guide will be conducted to monitor progress and provide guidance.

Final Assessment and Exit Examination:
The final assessment by the assigned guides includes the following components:
1. Multiple Choice Questions (MCQs): 25 marks
2. Practical Skills Assessment: Three case scenarios with discussion; each case carries 20 marks (total 60 marks)
3. Logbook Maintenance: 15 marks

The candidate must appear and secure a minimum of 50% marks in each of the above listed components. The total marks are 100, and a minimum aggregate score of 50% is required to successfully complete the fellowship.

Any additional outputs or deliverables may be determined in consultation with the Guide and require prior written approval from the Selection Committee.

9. MINIMUM STANDARD AND CREDITS FOR THE AWARD OF THE FELLOWSHIP

- Fellows must maintain a **minimum of 80% attendance** across all program activities.
- A **minimum overall score of 50%** is required to pass the fellowship.

10. FELLOWSHIP COMPLETION CERTIFICATE

Issued by MRV: Upon successful completion of all training, periodic evaluations, and final examinations, fellows will be awarded a certificate.

The certificate should include details such as:

- Name of the candidate
- Fellowship program details
- Program completion status

Fellowship in Digital Hospital Transformation

Course Overview

The Fellowship in Digital Hospital Transformation is a specialized program designed to equip healthcare professionals, administrators, and digital health innovators with the knowledge and skills needed to modernize hospital systems. The course provides a comprehensive understanding of digital technologies, hospital information systems, data-driven decision-making, workflow redesign, and change management. Through practical case studies and real-world implementation scenarios, participants learn how to integrate electronic health records, telemedicine, automation tools, AI-driven analytics, and smart hospital solutions to improve patient outcomes, operational efficiency, and quality of care. The fellowship prepares learners to lead digital transformation initiatives in hospitals and healthcare organizations.

Course Objectives

1. To provide a foundational understanding of Hospital Information Systems (HIS) and end-to-end digital hospital workflows.
2. To develop competency in interoperability standards including HL7, FHIR, ICD, SNOMED CT, and DICOM.
3. To strengthen awareness of healthcare cybersecurity, data protection frameworks, and risk mitigation.
4. To build understanding of legal, regulatory, and policy frameworks governing digital health in India.
5. To equip learners with skills in AI, data analytics, and clinical decision support for improving quality of care.
6. To introduce essential concepts of hospital IT infrastructure, networking, and hardware architectures.
7. To provide hands-on exposure to real-world HIS systems, telemedicine tools, and digital workflow redesign.
8. To prepare professionals to lead digital transformation initiatives within hospitals and healthcare organisations.

Curriculum with Part-wise Syllabus & Modules

Part 1: Foundations of Digital Hospitals

Module	Topics Covered
Introduction to Digital Health & HIS	Evolution of digital hospitals Components of Hospital Information Systems Clinical, administrative, financial, and operational modules Digital workflows & process mapping Case examples of Indian & global digital hospitals
Healthcare Interoperability	Need for interoperability in hospitals HL7 v2 & v3 – structure, messaging, use cases FHIR – resources, APIs, implementation ICD-10/11, SNOMED CT, LOINC – coding & classification DICOM standards for imaging systems Demo of interoperable workflows
Cybersecurity in Healthcare	Types of cyber threats (ransomware, phishing, breaches) Network & endpoint security Risk assessment & vulnerability management Security controls & incident response Data backup & disaster recovery (DR)
Legal & Regulatory Framework	Digital Personal Data Protection Act (DPDP Act) Telemedicine practice guidelines Medical device rules & software as a medical device Consent, confidentiality & medico-legal aspects HIPAA basics (for global relevance)
Digital Health Standards in India	NDHM / ABDM architecture Health ID, registries, health lockers HIE-CM & building blocks HIS compliance with ABDM

Part 2 : Advanced Technologies & Hospital Transformation

Module	Topics Covered
AI, Data & Analytics in Clinical Care	Role of AI in diagnostics & prediction Clinical decision support systems Data pipelines & dashboards Predictive analytics for hospital operations Quality indicators and benchmarking
IT Infrastructure in Hospitals	Server & network architecture Cloud vs on-prem deployment PACS, LIS, RIS components Procurement & vendor management Downtime & failover systems
Telemedicine & Virtual Care	Teleconsultation workflows Remote patient monitoring Device integration Operational & regulatory considerations
Change Management & Digital Transformation	Assessing digital maturity Transformation roadmap development

Strategy	Change leadership & training
	Costing, budgeting & ROI for digital projects
	Human–technology interaction
Capstone Project	Demonstration of HIS (OpenMRS/ Bahmni/ any demo HIS)
	Digital workflow redesign exercise
	Mini project
	Viva & presentation

Program Outcomes

SR.N.	Program Outcome	Detailed Description
1	**Understanding Digital Hospital Ecosystems**	Demonstrate comprehensive knowledge of HIS, clinical workflows, digital standards, and hospital technology architecture.
2	**Interoperability & Data Standards Competence**	Apply HL7, FHIR, ICD, SNOMED CT, and DICOM for creating connected and interoperable hospital systems.
3	**Healthcare Cybersecurity Proficiency**	Identify risks, enforce security controls, and implement safeguards to protect patient data and digital assets.
4	**Legal & Regulatory Compliance**	Interpret and apply DPDP Act, Telemedicine Guidelines, Medical Device Rules, and ABDM policies in digital implementations.
5	**Analytical & AI-Driven Decision-Making**	Utilize data analytics and AI tools to support clinical decision-making, improve quality indicators, and enhance patient outcomes.
6	**Digital Infrastructure Planning**	Evaluate and design IT infrastructure including networks, servers, PACS, LIS, and cloud/on-prem solutions for hospitals.
7	**Leadership in Digital Transformation**	Lead hospital digital transformation initiatives through planning, strategy, workflow redesign, and change management.
8	**Practical Application & Innovation**	Apply hands-on skills to HIS systems, digital tools, and real-world hospital scenarios to produce innovative solutions.

Course Outcomes

	Course Outcome	Detailed Description
1	**Explain HIS Architecture & Workflows**	Describe components of HIS, understand digital documentation, EMR flow, and end-to-end hospital digital processes.
2	**Use Interoperability Standards in Practice**	Demonstrate how HL7 messages, FHIR APIs, ICD codes, and SNOMED CT terminologies integrate into hospital systems.
3	**Apply Cybersecurity Principles**	Identify cyber threats, analyze vulnerabilities, and implement data protection methods in hospital environments.
4	**Interpret Healthcare Regulations**	Apply DPDP Act, telemedicine guidelines, and ABDM standards to ensure compliance in digital health projects.
5	**Utilize Analytics for Clinical & Operational Decisions**	Build dashboards, interpret hospital metrics, use basic predictive analytics, and support informed decision-making.
6	**Evaluate Hospital IT Infrastructure**	Assess server, network, and cloud requirements; understand PACS/LIS/RIS integration; evaluate vendor solutions.
7	**Plan and Execute Digital Transformation Projects**	Develop a transformation roadmap, conduct digital maturity assessments, and execute workflow redesign.
8	**Demonstrate Hands-On HIS Capability**	Work with demo HIS systems, telemedicine tools, interoperability sandboxes, and present a capstone project.

Recommended Books & E-Resources
Textbooks:
➢ Health Information Management: Concepts, Principles, and Practice – AHIMA
Biomedical Informatics: Computer Applications in Health Care & Biomedicine – Edward H. Shortliffe

➢ Healthcare Information Systems: A Practical Approach for Health Care Management – Wager, Lee & Glaser
➢ HL7 Essentials – Tim Benson
➢ FHIR Workbook / FHIR Tutorials – Grahame Grieve
➢ Digital Transformation in Healthcare – Nilmini Wickramasinghe
➢ Cybersecurity for Hospitals and Healthcare Facilities – Luis Ayala

Journals & E-Resources:
➢ ABDM official portal: https://abdm.gov.in
➢ NDHM Sandbox documentation
➢ HL7 International – https://www.hl7.org

- ➢ FHIR documentation – https://www.hl7.org/fhir
- ➢ WHO Digital Health Guidelines
- ➢ NHA Health Data Management Policy
- ➢ MIT OpenCourseWare – Health Informatics
- ➢ NPTEL: Health Informatics & Emerging Technologies