MALLA REDDY
VISHWAVIDYAPEETH
(Deemed to be University)

SCHOOL OF DIGITAL HEALTH SCIENCES & TECHNOLOGY

Fellowship in Advanced Medical Mobility and Supply Chain Optimization

Created in 2025

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 Advanced Medical Mobility and Supply Chain Optimization

Course Overview

The Fellowship in Advanced Medical Mobility and Supply Chain Optimization is designed to develop high-level expertise in the planning, coordination, and technological transformation of healthcare logistics. The program equips learners with advanced knowledge of medical mobility systems, supply chain planning, procurement, warehouse and cold chain management, transportation optimization, and digital innovations in healthcare logistics. Emphasis is placed on using data-driven approaches, automation, IoT-enabled systems, drone-based delivery models, and last-mile optimization methods to improve efficiency, quality, and resilience in healthcare delivery networks.

The fellowship provides a comprehensive understanding of end-to-end healthcare logistics—from forecasting and inventory control to cold chain design, emergency response logistics, fleet optimization, and supply chain risk mitigation. Participants receive hands-on training through simulation labs, digital tools, case studies, and operational modelling exercises. The program culminates in a capstone project focusing on an innovative mobility or supply chain optimization solution relevant to hospitals, public health systems, or emergency medical services.

Course Objectives

1. To provide foundational and advanced knowledge of medical logistics, mobility systems, and healthcare supply chain planning.
2. To introduce forecasting, procurement planning, inventory control, and warehouse operations tailored to healthcare.
3. To train learners in transportation modelling, route optimization, emergency logistics, and last-mile medical distribution.
4. To develop competencies in digital health supply chain technologies, including IoT, RFID, automation, and AI-enabled decision-making.
5. To build understanding of cold chain systems for vaccines, temperature-sensitive drugs, and biologicals.
6. To train learners in end-to-end logistics for emergency medical services, hospital supply chains, and public health programs.
7. To strengthen skills in optimizing fleet operations, scheduling, route planning, and alternative mobility solutions including drones and automated vehicles.
8. To prepare professionals to design and lead resilient, efficient, and scalable healthcare supply chain systems.

Curriculum with Part-wise Syllabus & Modules

Part 1: Foundations of Medical Logistics & Supply Chain Systems

Module	Topics Covered
Introduction to Healthcare Supply Chain & Medical Mobility	Structure of healthcare supply chains; stakeholders; medical mobility needs; supply chain performance indicators; logistics challenges in public and private health systems
Procurement, Inventory & Warehouse Management	Demand forecasting, procurement cycles, tendering, ABC/VED analysis, warehouse layout, storage protocols, quality assurance, medical disposables, pharmaceuticals, and facility-based stock control
Cold Chain & Temperature-Sensitive Logistics	Vaccine logistics, cold chain design, refrigeration technologies, thermal monitoring, temperature excursions, cold chain failures, risk mitigation strategies
Digital Technologies in Health Supply Chains	IoT, RFID, barcoding, digital logistics platforms, eLMIS, real-time tracking, automation, predictive analytics, dashboards, data-driven decision making
Quality, Risk & Compliance in Medical Logistics	Supply chain audit, quality standards, documentation, regulatory requirements, risk assessment, continuity planning, safety protocols and governance

Part 2: Advanced Mobility Systems, Optimization & Healthcare Logistics Innovation

Module	Topics Covered
Transportation Planning & Route Optimization	Transport modes (road, air, drone, water); mobility mapping; route planning; GIS-based optimization; fleet scheduling; last-mile delivery models; emergency delivery pathways
Emergency Healthcare Logistics & Humanitarian Supply Chains	Emergency medical transport, disaster logistics, rapid response systems, ambulance network optimization, triage-to-hospital supply flow, surge capacity management
Advanced Medical Mobility Systems (Emerging Technologies)	Drone-based delivery systems, autonomous vehicles, smart fleet management, telematics, EVs in medical logistics, robotic mobility platforms
Supply Chain Optimization & Decision Analytics	Mathematical modelling, linear programming, facility location analysis, simulation, cost optimization, inventory–mobility balancing, lean logistics
Capstone Project	Develop an innovative healthcare logistics or mobility optimization solution. Could include route optimization tools, cold chain improvement models, drone delivery prototypes, warehouse redesign, or emergency logistics simulation

Program Outcomes

SR.N.	Program Outcome	Detailed Description
1	**Expertise in Medical Logistics Foundations**	Demonstrate strong understanding of healthcare supply chain design, mobility requirements, and operational workflows
2	**Competence in Inventory & Cold Chain Systems**	Apply advanced inventory planning, warehouse management and cold chain strategies for medical supplies
3	**Proficiency in Digital Supply Chain Technologies**	Use IoT, real-time tracking, data analytics and digital tools to enhance healthcare logistics
4	**Skills in Mobility Planning & Optimization**	Perform route optimization, fleet scheduling, and transportation modelling for medical distribution
5	**Ability to Manage Emergency & Humanitarian Logistics**	Develop contingency plans, rapid response pathways, and emergency supply chain strategies
6	**Knowledge of Emerging Medical Mobility Technologies**	Understand and apply drone logistics, autonomous vehicles, EVs and innovative mobility platforms
7	**Competence in Supply Chain Simulation & Decision Analytics**	Build models and simulations to solve real-world optimization problems in healthcare systems
8	**Leadership in Healthcare Mobility & Supply Chain Improvement**	Lead planning, implementation and evaluation of efficient, safe and resilient healthcare logistics solutions

Course Outcomes

	Course Outcome	Detailed Description
1	**Explain Healthcare Supply Chain Structure**	Understand the components, flows and systems that drive medical logistics
2	**Manage Procurement & Inventory Systems**	Apply forecasting, ABC/VED analysis, stock control, and warehouse operations in real settings
3	**Implement Cold Chain & Quality Protocols**	Design and manage temperature-controlled logistics and safety-compliant operations
4	**Use Digital Tools for Supply Chain Visibility**	Use digital platforms, sensors and data systems to track and optimize logistics performance
5	**Apply Transportation & Route Optimization Methods**	Design transport strategies and optimized routing models for medical goods and samples
6	**Design Emergency Logistics Solutions**	Create logistic pathways for disaster, outbreak or urgent-care supply mobilization
7	**Apply Advanced Mobility Technologies**	Integrate drones, automated systems, and smart fleets into healthcare mobility workflows

8	**Develop a Healthcare Logistics Optimization Project**	Deliver a capstone project solving a real-world supply chain or mobility challenge

Recommended Books & E-Resources
Textbooks:

- Healthcare Supply Chain Management: Basic Concepts and Principles
- Logistics & Supply Chain Management – Martin Christopher
- Medical Device Logistics & Cold Chain Management
- Operations Research for Healthcare Systems