

THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY

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SYLLABUS

OF

M.Sc. TELEMEDICINE

ACADEMIC YEAR 2024 – 2025

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI – 32.

SYLLABUS - M.Sc. TELEMEDICINE

(Post-Graduate Degree Courses under Allied Health Sciences)

First Year :

Foundations of Telemedicine

Module 1: Introduction to Telemedicine

- **Overview of Digital Health**
 - Definition and scope of digital health
 - Importance and impact on healthcare systems
- **Digital Health Technologies**
 - Mobile health (mHealth) applications
 - Wearable devices and sensors
 - Electronic health records (EHRs)
- **Practical Sessions**
 - Practical 1: Exploring mHealth Apps
 - Practical 2: Introduction to EHR Systems
- **Assessments**
 - Assignments 1-2

Module 2: Telemedicine Fundamentals

Introduction to Telemedicine

- Definition and history of telemedicine
- Types of telemedicine (synchronous vs. asynchronous)
- **Telemedicine Technologies**
 - Video conferencing tools
 - Remote monitoring technologies
 - Telehealth platforms

- **Practical Sessions**
 - Practical 3: Using Telemedicine Platforms
 - Practical 4: Remote Patient Monitoring Techniques
- **Assessments**
 - Assignments 3-4

Module 3: Health Data Management

Data Collection and Management

- Types of health data (structured vs. unstructured)
- Data privacy and security considerations

- **Health Informatics**
 - Introduction to health informatics
 - Role of informatics in Telemedicine
- **Practical Sessions**
 - Practical 5: Data Management Tools in Health
 - Practical 6: Analyzing Health Data
- **Assessments**
 - Assignments 5-6

Module 4: Telemedicine Applications

Chronic Disease Management

- Role of digital health in managing chronic diseases
- Case studies on diabetes, hypertension, and mental health
- **Telemedicine in Rural and Underserved Areas**
 - Challenges and solutions for telemedicine access
 - Impact on health disparities
- **Practical Sessions**
 - Practical 7: Case Study Analysis

- Practical 8: Designing a Telehealth Intervention for a Specific Population
- **Assessments**
 - Assignments 7-8

Second Year :

Advanced Topics in Telemedicine & Project

Module 5: Ethical and Legal Considerations in Telemedicine

- **Ethics in Digital Health**
 - Ethical principles in telemedicine
 - Informed consent and patient autonomy
- **Legal Frameworks**
 - Regulations governing telemedicine in India, Europe and North America
 - Liability and malpractice issues in telehealth
- **Practical Sessions**
 - Practical 9: Ethical Dilemmas in Telemedicine
 - Practical 10: Analyzing Legal Case Studies in Telemedicine.
- **Assessments**
 - Assignments 9-10

Module 6: Future Trends in Telemedicine

Emerging Technologies

- Artificial intelligence and machine learning in healthcare
- Blockchain technology for health data security
- **Global Perspectives**
 - Digital health initiatives worldwide
 - The role of telemedicine in global health crises (e.g., pandemics)
- **Practical Sessions**

- Practical 11: Exploring AI Applications in Healthcare
- Practical 12: Developing a Proposal for a Telemedicine Initiative
- **Assessments**
 - Final Project: Comprehensive Telemedicine Initiative Proposal
 - Final Exam covering all modules

Module 7. -----Project Syllabus

Core Modules

Telemedicine and Telehealth Concepts: Introduction to telemedicine, digital health, and telehealth services.

Telecommunication Systems: Basics of networking, telecommunications in health systems, and data transfer protocols.

Health Informatics: Use of EHRs, health information systems, and data management in telemedicine.

Ethical and Legal Issues: Medical ethics, patient privacy, data protection and telehealth regulations.

Clinical Applications of Telemedicine: Remote monitoring, diagnosis, teleconsultations, and telehealth interventions across various specialties.

Healthcare Data Analytics: Data analysis methods, machine learning, and artificial intelligence in telemedicine.

Project Management in Telemedicine: Managing telemedicine projects, understanding healthcare workflows, and systems integration.

Project / Elective Modules

Mobile Health (mHealth): Use of mobile devices in healthcare.

Telemedicine in Rural/Global Health: Strategies for implementing telehealth in underserved areas.

Wearable Health Technology: Devices and sensors for remote patient monitoring.

Robotics in Telemedicine: Use of robotics in surgeries, diagnostics, and rehabilitation.

Virtual Reality (VR) in Telemedicine: Applications of VR in patient care and medical training.

Telemedicine for Chronic Disease Management: Remote management of chronic diseases such as diabetes, hypertension, and cardiac care.

Advanced Imaging and Robotics in Telemedicine: Technologies like robotics, virtual reality (VR), and advanced diagnostic imaging.