DAIHC-1-01T: Introduction to Healthcare Systems and Medical Data

Total Marks: 100
External Marks: 70
Internal Marks: 30
Credits: 4

Detailed Contents:

Module	Module Name	Module Contents	Lectures /Tutorials Hours
Module-1	Global Healthcare Systems and Infrastructure	Overview of global healthcare delivery systems Organizational structure: Hospitals, clinics, and public health Institutions Healthcare workflows: Inpatient and outpatient processes Role of healthcare professionals: Physicians, nurses, technicians, and Administrators Models of care: Primary, secondary, tertiary, and quaternary care Comparative analysis of healthcare systems (e.g., USA, UK, India, Saudi Arabia) Healthcare expenditure and policy impacts	15
Module-II	Medical Data Sources, Types, and Standards	Introduction to healthcare data ecosystems Types of medical data: Strµctured,semi-structured, and unstructured Sources: EHRs, EMRs, PACS, lab reports, wearable devices Standards in healthcare data: HL7 (Health Level 7): Messaging and data exchange DICOM: Imaging and interoperability SNOMED CT: Clinical tenninology ICD-10, LOINC, and FHIR overview	15
Module-III	Data Acquisition, Storage, Privacy & Ethical Considerations	Data acquisition in healthcare settings: Devices, manual entry, and automation Data storage: On-premise vs. cloud storage in healthcare Key privacy concerns: HIPAA (USA), GDPR (EU), and local regulations Interoperability and integration issues Challenges in healthcare data lifecycle: Accuracy, redundancy, and accessibility	15

		Ethical and legal issues: Informed consent, data ownership, algorithmic bias	
Module-IV	Introduction to Medical Data Interpretation and Preprocessing	Basics of healthcare datasets: Demographics, vitals, lab values Introduction to EHR data fields ePreprocessing techniques: Data cleaning (handling missing, duplicate entries) Data norn1alization and standardization Anonymization and de-identification Use of Python/R for simple preprocessing tasks (lab-aligned) Introduction to dataset repositories (MIMIC, PhysioNet)	15