

AI for Medical Professionals 2025

12-week Online Certificate Course

Inauguration: 15th June 2025
Course commencement: 16th June 2025



Offered by

- ▶ International Institute of Information Technology, Hyderabad (IIIT-H)
- ▶ National Academy of Medical Sciences (NAMS)
- ▶ IHub-Data, IIIT Hyderabad

Integration of Machine Learning based Artificial Intelligence (AI) in healthcare is transforming the way medical professionals diagnose, treat, and manage patients. Medical experts need to be imparted with necessary skills and understanding to effectively leverage these technologies. This course is designed to equip professionals with the knowledge and tools to understand, evaluate, and apply AI in clinical settings, aimed at enhancing patient care and operational efficiency.

OBJECTIVES

- ▶ Providing a foundational understanding of AI and its relevance to healthcare
- ▶ Familiarizing participants with the applications of AI techniques in clinical practice
- ▶ Fostering awareness of ethical and governance issues related to AI in medicine

TARGET GROUP

- ▶ Postgraduate medical students (MD/MS/MDS/Equivalent)
- ▶ Faculty and medical professionals (MD/ MS/ MCH/ DM/ MDS/ MBBS/ BDS)

ELIGIBILITY

- ▶ Basic knowledge of healthcare processes and clinical practice.
- ▶ Curiosity for understanding the impact of modern technology in healthcare.

REGISTRATION PROCESS

- ▶ Interested participants can apply through our website
- ▶ Fill out the registration form with personal and professional details.
- ▶ Submit proof of professional status (e.g., Institute ID card).
- ▶ Selected participants will be required to pay the course fee online

EXPECTED OUTCOMES

- ▶ Understanding of AI concepts and their applications in healthcare.
- ▶ Ability to evaluate AI tools in clinical settings.
- ▶ Hands-on experience with AI tools and basic model development.
- ▶ Improved ability to critically assess AI research and technologies.
- ▶ Enhanced ability to work collaboratively on AI projects in healthcare.

Key Contents

Module 1

Introduction to Artificial Intelligence (AI) in Healthcare

- Clinical Data Sets: Data sources and types (structured, unstructured) - Standards in data acquisition and management - Opportunities and challenges in data handling
- The Role of Smart and Intelligent Systems in Clinical Workflow: Computer Architecture and Computer Systems in Clinical workflow Traditional systems vs. intelligent systems in healthcare - Concepts of Intelligence and Smartness
- Recent Inroads / Trends of AI in Healthcare: Landmark applications in healthcare

Module 3:

Clinical Applications

Structure of Case Studies:

- Components: Clinical presentation and role of AI/ML - Data preparation and feature processing - Model building and evaluation - Results, inference, and wrap-up
- Domains (any 4 topics): Screening, Diagnosis, Prognosis, Treatment, Patient Management, Hospital Resource Management
- Specific Case Studies: Cases from the above domains will be discussed in relation to the data types and the algorithms relevant for specific problems.

Data Types:

- Signal-based - ECG (cardiovascular diseases), EEG (sleep staging)

Module 4

Ethics and Governance of AI

Data protection, privacy, anonymity, biases - Regulations and governance frameworks for AI as a medical device

Module 2

Basics of Machine Learning (ML)

- Introduction to AI: Definition, history, evolution, and applications of AI
 - Learning Paradigms: Supervised Learning (Classification & regression) - Unsupervised Learning (Clustering) - Reinforcement Learning
 - The ML Pipeline: Feature extraction, selection, and dimensionality reduction - Model building validation, and evaluation metrics
 - Recent Trends in AI: Generative AI, Foundational Models, ChatGPT
 - Image-based - Retinal Scans (Diabetic Retinopathy), Chest X-ray (Pneumonia / Covid)
 - Tabular data-based - EHRs (Covid, Sepsis)
 - Molecular-based - Genomics (Cancer), Structural Biology (Drug Discovery)
 - Text-based - Medical question-answering (Q&A) systems, ChatGPT Chatbots for Physical & Mental health
- ML and DL Algorithms:
- Tree-based methods (decision trees, random forests)
 - Neural Networks (NN) (multilayer perceptron, support vector machine)
 - Hierarchical Clustering
 - Deep Neural Networks (convolutional, recurrent, transformers)

Hands-on AI Projects (optional) Building

- a basic machine learning model Simple
- AI projects relevant to healthcare

Course Delivery and Certification

Lectures: Pre-recorded lectures (short multiple videos) released every week for participants to enable flexible learning at their convenience. Online Contact Sessions: Weekly online contact session (1-2 hrs duration) comprising summary of the lecture material, tutorials on the material covered in the video lectures, Q&A, and live demonstration of case studies.

Course Fees:

Faculty and medical professionals
(MD/MS/MCH/DM/MDS/MBBS/BDS or equivalent):
Rs. 30,000 (all inclusive)
Postgraduate medical students
(MD/MS/MDS or equivalent) : 15,000 (all inclusive)

Expected study-time per week: 3 hours

Assessment: Short quizzes / assignments after every contact session. Post-course assessment to measure learning outcomes.

Certification: Certificate of course completion will be issued jointly by IIIT-H, IHub-Data, & NAMS.

Contact Details:

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Scan to register



NB: Please refer to the course content before you register. Please write to midhuna.chandran@ihub-data.iiit.ac.in if you have any questions before registering for the course. The fee is non-refundable.