



Indian Institute of Technology Delhi
(IIT Delhi)

Executive Programme for AI in Healthcare

Type

Executive Program

Mode

Online

Duration

6 Months

Total fees

₹ 150,000

Indian Institute of Technology Delhi (IIT Delhi)

Established in 1961 as an Institute of National Importance, the Indian Institute of Technology Delhi (IIT Delhi) is one of India's premier institutions for engineering, technology and research. Renowned for its academic excellence, innovation and global collaborations, the institute fosters interdisciplinary learning and industry-driven research. IIT Delhi is committed to developing future-ready professionals and leaders capable of driving technological advancement and societal impact.

Executive Programme for AI in Healthcare

Highlights

- ◆ Build practical knowledge of AI, machine learning and deep learning applications in healthcare.
- ◆ Work with clinical datasets including electronic health records, medical imaging, genomics and sensor data.
- ◆ Gain exposure to tools such as Python, MATLAB, TensorFlow, Streamlit and healthcare interoperability standards.
- ◆ Apply learning through case studies, hands-on assignments and a capstone focused on a real healthcare challenge.
- ◆ Participate in a two-day IIT Delhi campus immersion featuring a 12-hour hands-on workshop.

Learning outcomes

- ◆ Apply AI and machine learning concepts to healthcare diagnosis, monitoring and treatment-related use cases.
- ◆ Process and analyse clinical data while considering privacy, ethics and healthcare data standards.
- ◆ Develop and evaluate predictive, imaging and natural language processing models for healthcare applications.
- ◆ Design deployment workflows integrating AI solutions with cloud platforms and hospital information systems.
- ◆ Build and present a clinically relevant AI solution through a faculty-guided capstone project.

Eligibility Criteria

Any graduate professional working in industry and academia with area relevant to AI in healthcare

Curriculum Overview

Module I: Foundations of AI (ML & DL) for Healthcare (3 subjects)

- ◆ Fundamentals of AI, Machine Learning, and Deep Learning (non-technical explanation) Prompt Engineering and Applications of AI in Healthcare
- ◆ Supervised vs. Unsupervised Learning, Key ML/DL algorithm walkthrough (Linear Regression, Decision Trees, Clustering, logistic regression, SVM, Neural Network (NN), Deep NN, Convolution NN, LLM, Generative AI etc.), When to use what? (Healthcare use cases)
- ◆ Python and MATLAB basics (Variables, Functions, Libraries), Data handling with Pandas & Numpy, Assignments: Analyze sample healthcare CSV data file, signal and images.

Module II: Healthcare Data & Clinical Big Data Analysis (9 subjects)

- ◆ Overview of EMR data; medical imaging data; histopathology images; physiological signals; genomics data; IoT data; Structure of Indian hospital data (practical exposure)
- ◆ Case Study
- ◆ IBM Watson for Oncology's deployment success and limitations in India
- ◆ Key applications and challenges of healthcare data (Opportunity for problem statements)
- ◆ Overview of public healthcare dataset such as MIMIC-III dataset; BraTS challenge dataset; etc.
- ◆ Healthcare data anonymization; pre-processing; data curation; data cleaning; missing value handling; data normalization; feature engineering; data augmentation; data split for training and testing; qualitative vs quantitative analysis; accuracy evaluation metrics
- ◆ Healthcare data ethics & compliance: HIPAA; GDPR; DISHA
- ◆ Introduction to big data and big data analytics using frameworks such as Apache Spark.
- ◆ Assignment: Related to the Preprocessing sample healthcare dataset



Curriculum Overview (continued)

Module III: AI Models & Predictive Analytics (8 subjects)

- ◆ Development / implementation and optimizations of ML models such as Logistic Regression; Random Forest; SVM; Neural Network; Example Case Studies
- ◆ Development / implementation and optimizations of DL models such as Convolution Neural Networks (CNN); Recurrent Neural Networks; Generative Adversarial Networks (GANs); Transformer for various tasks such as segmentation; classification; prediction; synthetic image generation.
- ◆ Example Project Assignments Options (Python/MATLAB only):
- ◆ CNN model for segmentation of a pathology on medical images such as X-Ray; MRI; CT; etc.
- ◆ ML model for imaging-based diagnosis
- ◆ ML model for physiological signal-based diagnosis
- ◆ CNN model for diagnosis classification of images/disease
- ◆ Image Synthesis using GAN

Module IV: AI Applications & Healthcare Automation (10 subjects)

- ◆ IoT sensors, data streams, real-time AI monitoring
- ◆ Case Study
- ◆ AI in diabetic foot ulcers, smart watches
- ◆ Building AI-powered decision support for doctors
- ◆ Case Study
- ◆ Apollo CDSS, NHS AI tools
- ◆ Automating admin tasks (billing, triage, discharge), RPA tools intro (UiPath, Automation Anywhere overview)
- ◆ Generative AI in Healthcare: LLMs, no-code tools, prompt engineering, radiology use-cases, (Application of AI in radiology, genomics, surgery, pharma, etc) regulatory basics AI-powered chatbots, virtual consultations
- ◆ Case Study
- ◆ Niramai breast cancer AI screening.

Module V: AI Deployment & Integration (4 subjects)

- ◆ Create AI-powered healthcare dashboards (Streamlit or MATLAB GUI), Deploy models on cloud (GCP/AWS intro)
- ◆ Case Study
- ◆ Streamlit-based diabetes risk dashboard used by clinical trial teams
- ◆ How AI plugs into HIS workflows, Data visualization using Streamlit or MATLAB only,

Module VI: Public Health & Population Analytics (6 subjects)

- ◆ Time-series modeling for COVID-like prediction, Geo-mapping disease spread (India datasets)
- ◆ AI for malaria & dengue surveillance,
- ◆ Case Study II
- ◆ Using AI insights for healthcare planning.
- ◆ AI in malaria surveillance & mapping in Odisha
- ◆ Case Study I

Capstone Project (5 subjects)

- ◆ Applied AI for healthcare – develop ML/DL model or AI dashboard using Python/MATLAB, final presentation & evaluation
- ◆ Assessments: Assessments
- ◆ Quizzes, Assignments, Capstone Projects, Mid Term and End Term reports
- ◆ Expert Roundtable: Expert Roundtable
- ◆ Healthcare innovation trends, regulatory talks, med-tech career guidance

Expert Roundtable (3 subjects)

- ◆ Healthcare innovation trends
- ◆ Med-tech career guidance
- ◆ Regulatory talks



Curriculum Overview (continued)

Assessments (4 subjects)

- ◆ Quizzes
- ◆ Assignments
- ◆ Capstone Projects
- ◆ Mid Term and End Term reports

Fee Structure

Fee heads	Amount
Program Fee	₹ 150,000
Total	₹ 150,000