Indian Institute of Information Technology Dharwad (IIIT Dharwad)

M.Tech Computer Science & Engineering (AI & ML Specialization)

Type Pg Program	Mode Online
Duration 2 Years	Total fees ₹ 354,000

UNIVERSITY

Indian Institute of Information Technology Dharwad (IIIT Dharwad)

IIIT Dharwad is an Institute of National Importance known for technology education research and industry collaboration. Located in the Hubballi-Dharwad innovation hub it promotes interdisciplinary learning creativity and responsible innovation. The institute develops globally competent technology professionals equipped to address evolving societal and digital challenges.

PROGRAM

M.Tech Computer Science & Engineering (AI & ML Specialization)

Highlights

- Earn an M.Tech in Computer Science & Engineering with a specialisation in AI & ML from IIIT Dharwad.
- Build advanced capabilities in machine learning, deep learning, Generative AI, NLP, computer vision and reinforcement learning.
- Apply learning through simulations, practical assignments, research projects and a comprehensive capstone.
- Learn from IIIT Dharwad faculty and experienced industry professionals through a flexible online format.
- Participate in a seven-day campus immersion and gain access to IIIT Dharwad alumni privileges upon successful completion.

Learning outcomes

- Design and implement machine learning algorithms, deep learning models and intelligent AI systems.
- Analyse complex datasets using mathematical, statistical and computational approaches.
- Apply AI and ML techniques across computer vision, robotics, speech, healthcare and financial analytics.
- Conduct research surveys, experiments and projects using structured research methodologies.
- Develop responsible, explainable and secure AI solutions while considering ethical and societal implications.

Eligibility Criteria

Educational Qualification : Any Graduate with a background in B.Tech / B.E., M.Sc., or M.C.A.

Academic Performance:

General / OBC category

Minimum CGPA/CPI: 6.5 on a 10-point scale, or Minimum aggregate percentage: 60%.

SC / ST / PwD category

Minimum CGPA/CPI: 6.0 on a 10-point scale, or Minimum aggregate percentage: 55%.

Curriculum Overview (continued)

Semester I (41 subjects)

- Applied Mathematics for Computer Science
- Unit 1: Linear Algebra
- Unit 2: Optimization
- Unit 3: Probability and Stochastic Process
- Advanced Data Structures and Algorithms
- Unit 1: Growth Functions
- Unit 2: Trees
- Unit 3: Graph Algorithms
- Unit 4: Algorithm Design Strategies
- Unit 5: Complexity Classes
- Programming Paradigms Lab
- Unit 1: Procedural Programming
- Unit 2: Object-Oriented Programming
- Unit 3: Functional Programming
- Unit 4: Concurrent and Parallel Execution
- Unit 5: Declarative and Logic Programming
- Unit 6: Scripting and Automation
- Introduction to AI/ML
- Unit 1: Introduction to AI
- Unit 2: Problem Solving Using Search
- Unit 3: Knowledge Representation
- Unit 4: Introduction to Machine Learning
- Unit 5: Supervised Learning
- Unit 6: Unsupervised Learning
- Introduction to Cybersecurity
- Unit 1: Introduction to Cybersecurity
- Unit 2: Identity and Access Management
- Unit 3: Standards and Regulations
- Introduction to Cloud Computing
- Unit 1: Introduction to Cloud Computing
- Unit 2: Cloud Service Models and Deployment Models
- Introduction to Research
- Unit 1: Introduction
- Unit 2: Literature Review
- Unit 3: Research Exploration
- Unit 4: Patenting and Publications
- Unit 5: Presentation
- Report and Thesis Writing
- Unit 6: Conclusions and Future Scope
- Unit 7: Principles and Ethics in Research
- Project I

Curriculum Overview (continued)

Semester II (10 subjects)

- Advanced Computing Lab
- Unit 1: Advanced Programming and Performance Engineering
- Unit 2: Parallel Computing Platforms
- Unit 3: Distributed Computing Frameworks
- Unit 4: GPU and Accelerated Computing
- Unit 5: Cloud and Container-Based Computing
- Unit 6: AI/ML Pipeline Engineering
- Literature Review and Seminar
- Electives (1/2/3/4 credits)
- Project-II

Semester III (2 subjects)

- Project-III
- Electives (1/2/3/4 credits)

Semester 4 (2 subjects)

- Project-IV
- Electives (1/2/3 credits)

Curriculum Overview (continued)

AI & ML Specialization (65 subjects)

- Generative AI
- Overview of AI and Generative AI
- Tools and Models in Generative AI
- Applications of Generative AI
- Speech and Natural Language Processing
- Lexical Processing in NLP
- Syntactic Processing in NLP
- Semantic Processing in NLP
- Phonetics and Speech Processing
- Automatic Speech Recognition and Text-to-Speech
- Deep Learning
- Review of Neural Networks
- Deep Feedforward Neural Networks
- Convolutional Neural Networks
- Sequence Models
- Generative Models
- Computer Vision
- Foundations of Neural Networks
- CNNs for Image Classification
- Evaluating Datasets Using Metrics
- CNNs for Segmentation
- Recurrent Neural Networks for Vision
- Graph Neural Networks
- Graph Fundamentals
- Graph Neural Network Foundations
- Core Architectures
- Advanced Topics

- Applications
- Agentic AI
- Foundations of Intelligent Agents
- Planning and Decision-Making
- Learning-Based Agents
- LLM-Based and Tool-Using Agents
- Safety
- Ethics and Evaluation
- Reinforcement Learning
- Introduction to Reinforcement Learning
- Classical Reinforcement Learning Methods
- Deep Learning-Based Reinforcement Learning
- Explainable AI
- Foundations of Explainable AI
- Interpretable Models
- Model-Agnostic Post-Hoc Methods
- Visual Explainable AI
- Evaluation and Ethics
- Robotics and AI
- Robotics Fundamentals
- Perception for Robotics
- Planning and Control
- Learning in Robotics
- Applications and Case Studies
- AI for Financial Analytics
- Financial Data and Markets
- Time-Series Modelling
- Risk and Fraud Analytics
- Algorithmic Trading
- Ethics and Regulation
- Deep Speech Processing
- Overview of Speech Processing
- Machine Learning and Speech Processing
- Deep Learning and Speech Processing
- AI for Healthcare and Data Analytics

Fee Structure

Fee heads	Year 1	Year 2	Total
Program Fee	₹ 177,000	₹ 177,000	**₹ 354,000**
Total	**₹ 177,000**	**₹ 177,000**	**₹ 354,000**