



MACHINE LEARNING (ML) SYLLABUS COPY

Engineered for skill enhancement.



PROGRAM HIGHLIGHTS

Accredited Certificates :

- ✓ Program approved ISO Certification

Internships :

- ✓ Industry-relevant opportunities provided-

Placement Assistance :

- ✓ Career guidance from industry experts-

Basic to Advanced Level Training :

- ✓ Learn from experienced AI professionals .

Live & Recorded Lectures :

- ✓ Flexible learning at your convenience .

Real-Time Projects :

- ✓ Hands-on minor & major projects



ABOUT US

- **OUR MISSION :**

Nxt Sync is a pioneering EdTech company committed to bridging the gap between theoretical learning and practical application. Our mission is to empower students with cutting-edge AI skills that enhance employability and prepare them for a tech-driven future.

- **OUR VISION--UPSKILL:** Empowering minds for the future.
- **INNOVATE:** Fostering creativity and breakthroughs .
- **EXCEL:** Preparing industry-ready professionals.



WHY MACHINE LEARNING?

- High Demand in Data-Driven Industries
- Automation & Predictive Capabilities
- Real-World AI Applications
- Competitive Salaries & Career Growth
- Enhancing Decision-Making with Data
- Improving Efficiency & Accuracy
- Scalable Across Multiple Domains



LEARNING PATH

- Introduction to Machine Learning
- Python for Machine Learning
- Data Handling & Preprocessing
- Supervised & unsupervised Learning Algorithms
- Feature Engineering & Model Optimization
- Deep Learning & Neural Networks
- Natural Language Processing (NLP)
- Reinforcement Learning Basics
- Computer Vision Fundamentals
- Model Deployment & Cloud Integration
- Capstone Projects & Industry Case Studies



DETAILED MODULE BREAKDOWN

Module 1: Introduction to Machine Learning

- History & Evolution of ML
- Types of Machine Learning (Supervised, Unsupervised, Reinforcement)
- Applications of ML in Various Industries

Module 2: Python for Machine Learning

- Introduction to Python & Jupyter Notebooks
- Essential Libraries (NumPy, Pandas, Matplotlib, Seaborn)
- Exploratory Data Analysis (EDA)



Module 3: Data Handling & Preprocessing

- Structured vs. Unstructured Data
- Data Cleaning & Transformation
- Feature Engineering & Selection

Module 4: Supervised Learning Algorithms

- Regression Models (Linear, Polynomial)
- Classification Algorithms (Decision Trees, SVM, KNN)
- Model Training & Evaluation Metrics

Module 5: Unsupervised Learning Techniques

- Clustering (K-Means, DBSCAN, Hierarchical)
- Principal Component Analysis (PCA)
- Anomaly Detection



Module 6: Feature Engineering & Model Optimization

- Feature Scaling & Normalization
- Hyperparameter Tuning (Grid Search, Random Search)
- Bias-Variance Trade off & Model Validation

Module 7: Deep Learning & Neural Networks

- Fundamentals of Neural Networks
- Backpropagation & Optimization Techniques
- Deep Learning Frameworks (TensorFlow, Keras, PyTorch)

Module 8: Natural Language Processing (NLP)

- Text Preprocessing (Tokenization, Lemmatization, Stemming)
- Sentiment Analysis & Named Entity Recognition (NER)
- Transformer Models (BERT, GPT)



Module 9: Reinforcement Learning Basics

- Introduction to RL Concepts
- Markov Decision Processes (MDPs)
- Q-Learning & Deep Q-Networks (DQNs)

Module 10: Computer Vision Fundamentals

- Image Processing Techniques
- Convolutional Neural Networks (CNNs)
- Object Detection & Image Classification

Module 11: Capstone Projects & Industry Case Studies

- Hands-on Real-Time Machine Learning Projects
- AI Applications in Healthcare, Finance, and Retail
- Industry Collaboration & Research-Based Projects



ASSIGNMENT'S & ASSESSMENTS

- **Weekly hands-on assignments**
- **Mid-term AI mini-projects**
- **Final capstone AI project**
- **Live presentations & discussions**



TOOLS & FRAMEWORKS USED

Programming & Libraries

- Python, Jupyter Notebook
- NumPy, Pandas, Matplotlib, Scikit-learn

Deep Learning

- TensorFlow, Keras, PyTorch

NLP & Computer Vision

- NLTK, SpaCy, OpenCV

Data Handling

- SQL, MongoDB

Reinforcement Learning

- Gym, OpenAI



RECOMMENDED READING

- **Machine Learning & AI:**
"Pattern Recognition and Machine Learning" - Christopher Bishop
- "Hands-On Machine Learning with Scikit-Learn, Keras & TensorFlow" - Aurélien Géron
- "Deep Learning" - Ian Goodfellow, Yoshua Bengio & Aaron Courville



WHY CHOOSE NXTSYNC?

- Industry-Aligned ML Curriculum
- Hands-on Real-World Projects
- Expert Mentorship & Career Guidance
- Flexible Learning Schedule
- ISO-Certified ML Training Program

Start Your ML Journey with NxtSync Today!!!!



THANK YOU

