AI 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

- **<u>OUR MISSION</u> :**

    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.

- **<u>OUR VISION--UPSKILL</u>**: Empowering minds for the future

- **<u>INNOVATE</u>**: Fostering creativity and breakthroughs

- **<u>EXCEL</u>**: Preparing industry-ready professionals

WHY ARTIFICIAL INTELLIGENCE?

➢ Automation of Repetitive Tasks

➢ Enhanced Decision-Making

➢ AI-Driven Personalization

➢ Innovation & Creativity in Industries

➢ Improved Accuracy & Precision

➢ Solving Complex Problems Efficiently

➢ Economic Growth & Career Opportunities

➢ Scalability Across Domains

➢ Enhancing Human Capabilities with AI

LEARNING PATH

- **Introduction to Artificial Intelligence**
- **AI Fundamentals**
- **AI Programming & Tools**
- **Data Handling & Preprocessing**
- **Machine Learning Essentials**
- **Advanced Machine Learning**
- **Deep Learning & Neural Networks**
- **Natural Language Processing (NLP)**
- **Reinforcement Learning**
- **Computer Vision & AI Applications**
- **AI Ethics & Responsible AI**
- **Capstone Projects & Industry Case Studies**

DETAILED MODULE BREAKDOWN

- ## Module 1 :

Introduction to Artificial Intelligence :

➢ Evolution & History of AI - AI vs. Human Intelligence - Applications of AI in Industries - Ethics, Bias, and Societal Impact of AI .

- ## Module 2 :

AI Fundamentals :

➢ Key AI Concepts & Terminology - Intelligent Agents & Environments - Problem-Solving & Search Algorithms - Introduction to Knowledge Representation .

Module 3 :

AI Programming & Tools :

➢ Introduction to Python for AI - Essential Libraries (NumPy, Pandas, Matplotlib) - Programming Constructs & Jupyter Notebooks - AI Development Environments (Anaconda, Google Collab).

Module 4:

Data Handling & Preprocessing :

➢ Structured vs. Unstructured Data - Data Collection, Cleaning & Transformation - Exploratory Data Analysis (EDA) - Feature Engineering & Selection

Module 5:

Machine Learning Essentials :

➢ Fundamentals of Machine Learning - Supervised vs. Unsupervised Learning - Key ML Algorithms (Decision Trees, SVM, KNN) - Regression Models (Linear & Polynomial Regression).

Module 6:

Advanced Machine Learning :

➢ Ensemble Methods (Random Forest, XGBoost
➢ Clustering Techniques (K-Means, Hierarchical Clustering)
➢ Dimensionality Reduction (PCA, LDA)
➢ Model Evaluation & Validation Techniques

Module 7:

Deep Learning & Neural Networks :

- Neural Network Basics & Perceptrons
- Backpropagation & Optimization Techniques
- Deep Learning Frameworks (TensorFlow, Keras)
- Hyperparameter Tuning & Model Optimization

Module 8:

Natural Language Processing (NLP) :

- Introduction to NLP & Text Processing
- Tokenization, Stemming, Lemmatization
- Sentiment Analysis & Named Entity Recognition (NER)
- Transformer Models (BERT, GPT) & Chatbots

Module 9:
Reinforcement Learning :
- Introduction to RL Concepts - Markov Decision Processes (MDPs) - Q-Learning & Deep Q-Networks (DQNs) - Policy Gradient Methods

Module 10:
Computer Vision & AI Applications
- Image Processing Techniques - Convolutional Neural Networks (CNNs) - Object Detection & Image Recognition - AI in Speech Recognition & Healthcare

Module 11:
- **AI Ethics & Responsible AI** - Ethical Considerations & Bias in AI - Fairness & Transparency in AI Models - Privacy & Security in AI Systems - Future Trends: Edge AI, Explainable AI (XAI)

Module 12:
Capstone Projects & Industry Case Studies :
- Hands-on Real-Time AI Projects - AI Applications in Finance, Healthcare & Retail - AI-Powered Automation & Chatbot Development - Industry Collaboration & Research-Based Projects

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ASSIGNMENT'S &ASSESSMENTS

- ➢ **Weekly hands-on assignments**

- ➢ **Mid-term AI mini-projects**

- ➢ **Final capstone AI project**

- ➢ **Live presentations & discussions**

TOOLS & FRAMEWORKS USED

Programming :

➤ Python, Jupyter Notebook

Libraries:

➤ NumPy, Pandas, Matplotlib, Scikit-learn

Deep Learning:

➤ TensorFlow, Keras, PyTorch

Data Handling:

➤ SQL, MongoDB

NLP:

➤ NLTK, SpaCy, Hugging Face Transformers

Computer Vision:

➤ OpenCV, CNNs

Reinforcement Learning:

➤ Gym, OpenAI

RECOMMENDED READING

Artificial Intelligence:

➢ A Modern Approach" - Stuart Russell & Peter Norvig - **"Deep Learning"** - Ian Goodfellow, Yoshua Bengio & Aaron Courville - "Hands-On Machine Learning with Scikit-Learn, Keras & TensorFlow" - Aurélien Géron

WHY CHOOSE NXTSYNC?

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

Start Your AI Journey with NxtSync Today!!!!