Sunbeam Modular Courses – Complete Details

COURSES

Course Information

Batch Schedule : 26-Oct-2023 To 28-Nov-2023
Schedule : Weekdays - (Mon -Fri)
Duration : 40 hrs.
Timings : 07:30 AM To 9:30 AM
Fees : Rs. 7500/- (Inc. 18% GST)

Course Highlights

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Target Audience:

Students
Fresher's
Working Professionals
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Syllabus:

Introduction to Machine Learning
Big picture of machine learning
Why machine learning is needed?
Types of machine learning
Challenges of machine learning
Creating machine learning pipeling
End-to-end process
Regression
Understanding statistical regression
Performing regression with
Simple linear regressison
Multiple linear regression
Support vector machine
Evaluating models using RMSE, MSE, MAE etc
Classification

Understanding need of classification
Classification vs regression
Performing classification with
Logistic regression
Support vector machine
Decision trees
K nearest neighbours
Evaluating models using AuC and RoC etc
Ensemble Learning
What is ensemble learning
Need of ensemble learning
Types of ensemble learning
Bagging
Random forest
Boosting
Gradient boosting
Xgboost
Stacking
Clustering
Why clustering is needed?
Performing clustering using
Hierarchical clustering
K meaning clustering
Association Rule Mining
Where association rule mining is needed
Performing association rule mining using
Apriori
Dimensionality Reduction
Introduction to feature extraction
What is dimensionality reduction?
Performing dimensionality reduction using
PCA
Introdution to Deep Learning
What is deep learning?
Introduction to artificial networking
Introduction to TensorFlow and Keras
Introduction MLPs with Keras
Convolutional Neural Network
Deep computer vision using CNN
Introduction to images and convolutions
CNN architecture
Image classification using CNN
Object detection using CNN

Recurrent Neural Network
Introduction to RNN
Processing sequences using RNN
Training RNN
Forecasting time series using TensorFlow
Naural language processing using RNN
Representation Learning and GANs
Introduction to autoencoders
Stacked autoencoders
Introduction to GAN
Reinforcement Learning
Introduction to reinforcement learning
Introduction to OpenAI gym
Q-learning
Deep Q-Learning
Deploying model on cloud (AWS)
Saving models
Serving TensorFlow model
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Pre-requisites:

Python fundamentals
Collections
Functions
Classes
Decorators
Packages
Numpy
Pandas
Matplotlib
Statistics fundamentals
Note: Training videos on important topics will be shared for your own practice
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Outcome:

You will be able to understand when, where and how to use ML
You will be able to solve problems related to regression, classification, AI etc.
You will be able to create models which can be used in desktop and mobile applications
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Important Note:

Course does not cover the following:

Python Programming Syntax, even though entire ML programming will be done in Python. (Join prerequisite course : python-development)

Statistics behind ML algorithms, however foundations of descriptive & inferential statistics are covered exclusively (Refer syllabus).

Web technologies, however serving ML model in the web application is covered.

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Software Setup:

Python 3.x

IDE: Pycharm

Packages: numpy, pandas, scikit, pytorch, keras, flask

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Student Feedback:

The excellent teaching style and excellent understanding of teaching topics. What I like the most about the course is how Amit Sir helps to improve visualization of code using proper diagrams and images. Also, proper sequencing of sample examples helps to revise the topic in the future. It s good that sir gives more time on basic topics in the beginning so that the foundation is strong. Your knowledge and leadership provide us with a priceless model for our own careers. I am so happy you are part of my education. I learned to truly care about diversity and inclusion through your classes, and I hope now spread that message in a passionate but thoughtful way. You re awesome!

Amazing skill of teaching and a very well structured course for people to start to learn to machine learning. The assignments are very good for understanding the practical side of machine learning. To all those thinking of getting in ML, this is a must-have course. Kindly continue these online sessions post COVID-19 pandemic. It's really helpful for those who cannot come to the institute due to timing issues /working out of Pune etc. but willing to learn from you all.

Thank You.

Kudos to Sunbeam and Amit Sir again, for conducting Machine Learning with Python course in such a great manner. Amit Sir teaching as always is very precise and he goes out of this schedule to answer and cover, each and every doubt of the students and the topic in the syllabus. The course was also extended by a week, so as to cover all the topics in a meticulous manner.

Thank you Amit Sir and Sunbeam once again :)

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Batch schedule

Sr.No Batch Code Start Date End Date Time

1 ML-O-07 26-Oct-2023 28-Nov-2023 07:30 AM To 9:30 AM

Schedule : Weekdays - (Mon -Fri)

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COURSES

Course Information

Batch Schedule : 14-Jul-2025 To 03-Sep-2025

Schedule : Mon - Thu

Duration : 60 Hrs

Timings : 9:00 PM To 11:00 PM

Fees : Rs. 17900/-

Course Introduction

Join Amit Kulkarni, an industry expert and certified AI specialist, as he walks you through the Mastering GenAI course at Sunbeam Pune. This program is designed to help you understand, build, and innovate with AI-powered solutions.

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Syllabus:

Mastering AI Basics

Overview of Statistics

Definition and importance of statistics

Types of statistics: descriptive and inferential

Role of statistics in data science and machine learning

Basic statistical terminology (population, sample, parameter, statistic)

Sampling

Sampling methods

sampling distributions

Central Limit Theorem

Descriptive Statistics

Measures of central tendency (mean, median, mode)

measures of variability (range, variance, standard deviation)

skewness and kurtosis

Probability:

Basic concepts of probability, conditional probability

Bayes' theorem.

Random variables and probability distributions

Distributions:

Normal distribution

Binomial distribution

Poisson distribution

Uniform distribution

Hypothesis Testing:
Null and alternative hypotheses
Type I and Type II errors
P-values
Confidence intervals
Correlation Analysis:
Pearson correlation
Spearman's rank correlation
Time Series Analysis:
Trend analysis
Seasonality
Moving averages
ARMA models
ARIMA models
Data Visualization:
Importance of data visualization
Principles of effective data visualization
Common visualization techniques:
Histograms
Box plots
Scatter plots
Heatmaps
Bar charts
Data Preprocessing
Data cleaning and handling missing values
Data transformation (normalization, standardization)
Feature engineering and selection
Encoding categorical variables
Handling imbalanced datasets
Data splitting (training, validation, test sets)
Data augmentation techniques
Outlier detection and handling
Introduction to Machine Learning
Overview of machine learning
Types of machine learning:
supervised learning
unsupervised learning
reinforcement learning
semi-supervised learning
Applications of machine learning
Challenges and limitations of machine learning
Regression Analysis

Overview of regression analysis
Algorithms for regression:
Linear regression
Ridge regression
Lasso regression
Assumptions of regression analysis
Model evaluation metrics (R-squared, adjusted R-squared, RMSE, MAE)
Model interpretation and communication of results
Applications of regression analysis
Classification
Overview of classification
Types of classification
Evaluation metrics for classification (Confusion matrix, accuracy, precision, recall, F1-score, ROC-AUC)
Algorithms for classification:
Decision trees
k-nearest neighbors (k-NN)
Naive Bayes
Ensemble methods (Bagging, Boosting, Stacking)
Hyperparameter tuning and model selection
Cross-validation techniques
Applications of classification
Clustering
Overview of clustering
Types of clustering:
K-means clustering
Hierarchical clustering
Evaluation metrics for clustering (Silhouette score)
Dimensionality Reduction
Overview of dimensionality reduction
Importance of dimensionality reduction
Techniques for dimensionality reduction:
Principal Component Analysis (PCA)
Mastering-AI-Advance
Introduction to Deep Learning
Overview of deep learning
Differences between traditional machine learning and deep learning
Applications of deep learning in various domains
Challenges and limitations of deep learning
Overview of generative AI
Applications of generative AI in various domains
Challenges and limitations of generative AI
Deep Learning Frameworks

Overview of popular deep learning frameworks (TensorFlow, PyTorch, Keras)
Overview of generative AI frameworks (Huggingface, Langchain)
Setting up the environment
Artificial Neural Networks (ANNs)
Feedforward neural networks
what is a perceptron
Multi-layer perceptrons (MLPs)
Activation functions (ReLU, sigmoid, tanh)
Loss functions (mean squared error, cross-entropy)
Regression and classification using ANNs
Model evaluation metrics (accuracy, precision, recall, F1-score)
Model interpretability
Applications of ANNs in real-world scenarios
Hands-on: Build and train ANN model for regression and classification tasks
Convolutional Neural Networks (CNNs)
Overview of CNNs and their architecture
Convolutional layers and filters
Pooling layers (max pooling, average pooling)
Flattening and fully connected layers
Applications of CNNs in image processing and computer vision
Hands-on: Build and train a CNN for image classification
Recurrent Neural Networks (RNNs)
Overview of RNNs and their architecture
ANN vs CNN vs RNN
Long Short-Term Memory (LSTM) networks
Gated Recurrent Units (GRUs)
Applications of RNNs in natural language processing and time series analysis
Hands-on: Build and train an RNN for text classification or time series prediction
Generative Adversarial Networks (GANs)
Overview of GANs and their architecture
Generator and discriminator networks
Training GANs and challenges
Applications of GANs in image generation and data augmentation
Variants of GANs (DCGAN, CycleGAN, StyleGAN)
Hands-on: Build and train a GAN for image generation
Transfer Learning
Overview of transfer learning
Fine-tuning pre-trained models
Applications of transfer learning in various domains
Hands-on: Fine-tune a pre-trained model for a specific task
Natural Language Processing (NLP)
Overview of NLP and its applications
Text preprocessing techniques (tokenization, stemming, lemmatization)

Word embeddings (Word2Vec, GloVe, FastText)
Sequence-to-sequence models
Attention mechanisms in NLP
Named Entity Recognition (NER)
Sentiment analysis
Fine-tuning pre-trained models for NLP tasks
Hands-on: Build and train an NLP model for text classification or sentiment analysis
Large Language Models (LLMs)
Overview of LLMs and their architecture
Transformer architecture
Attention mechanisms
Pre-training and fine-tuning LLMs
Applications of LLMs in natural language processing
Hands-on: Fine-tune a pre-trained LLM for text generation or classification
Retrieval-Augmented Generation (RAG)
Overview of RAG
How RAG works
Applications of RAG in natural language processing
Challenges and limitations of RAG
Future directions of RAG
Hands-on: Build a RAG model for a specific task (e.g., chat with PDF, chat with CSV, chat with text)
Evaluation metrics for RAG models
Hands-on: Evaluate the performance of a RAG model
Agentic RAG
Overview of agentic RAG
How agentic RAG works
Applications of agentic RAG in natural language processing
Challenges and limitations of agentic RAG
Future directions of agentic RAG
Hands-on: Build an agentic RAG model for a specific task
Fine tuning LLMs
Overview of fine-tuning LLMs
How to fine-tune LLMs
Applications of fine-tuning LLMs in natural language processing
Challenges and limitations of fine-tuning LLMs
Future directions of fine-tuning LLMs
Hands-on: Fine-tune an LLM for a specific task
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Prerequisites:

Beginners with basic python knowledge

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Student Feedback:

Amit Kulkarni Sir is truly the best in this field. He explains the basics of technology, which is rare, and makes difficult concepts easy to understand. His syllabus is market-oriented, covering the latest trends.

Amruta Deole, Senior Software Developer

The hands-on projects, prompt engineering techniques, and deployment strategies were especially valuable. A great choice for both freshers and professionals aiming to upskill in Gen AI.

Rahul Kulkarni, Data Analyst & ML/DL Developer

Amit Sir answered thousands of questions with a smile. His passion for teaching and deep expertise inspired me. The sessions were technically sound and full of real-world insights.

Sanket Gawali, Solution Developer

The course provided a strong foundation, progressing seamlessly from basics to advanced topics like RAG and LLMs. The balance of theory and practice was perfect.

Shivani Bhinge, Associate Data Science Engineer

This was a zero-to-hero Generative AI course. I can now make an impact in my work using AI. Amit Sir s humility and support even after the course are unparalleled.

Chaitanya Takalikar, Software Engineer

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Batch schedule

Sr.No Batch Code Start Date End Date Time

1 AI-O-002(Combo A+B) 14-Jul-2025 03-Sep-2025 9:00 PM To 11:00 PM

2 Mastering-AI-Basics-O-01(A) 14-Jul-2025 06-Aug-2025 9:00 PM To 11:00 PM

3 Mastering-AI-ADV-O-01(B) 07-Aug-2025 03-Sep-2025 9:00 PM To 11:00 PM

Schedule : Mon - Thu

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Course Information

Batch Schedule : 11-Dec-2025 To 08-Jan-2026
Schedule : Mon-Fri
Duration : 1 Month
Timings : 11:00 AM To 12:30 PM
Fees : Rs. 3000/-

Target Audience:

Students
Fresher's
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Course Contents:

Aptitude, Reasoning, English
Computer Fundamentals & Concepts of Programming
C Programming, C++
Data Structure, Operating Systems
Data Communication Networking
Big Data, Al
Computer Architecture, Digital Electronics, and Microprocessors
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Batch schedule

Sr.No Batch Code Start Date End Date Time
1 Mastering MCQs-O-03 For C-CAT & MNC Interviews 11-Dec-2025 08-Jan-2026 11:00 AM To 12:30 PM
Schedule : Mon-Fri
CLICK TO REGISTER

COURSES

Course Information

Batch Schedule : 02-Jun-2025 To 03-Jul-2025
Schedule : Mon-Thu
Duration : 40 hrs.
Timings : 09:00 PM To 11:00 PM
Fees : Rs. 9100/-

Syllabus

NODE
Introduction
what is node
advantages and limitations
Environment setup
install node
create a new project
configure project properties
debugging node application
Basics
introduction to npm
introduction to package.json
importing npm modules
command line arguments
node async vs sync
threading model
microservices
introduction to microservices
developing microservices using js
configuration
deployment
Http
creating web server
calling REST apis
Express
introduction to express
create new project
express routes and router
middleware

connecting to database
adding authentication
Node modules
file system
buffer
express
crypto-js
multer
mysql2
postgres
moment
passport
morgan
React
Setting up environment
installing nodejs
installing and configuring babel
installing and configuring webpack
Introduction to SPA
what is single page architecture?
SPA architecture
Pros and Cons
other SPA frameworks
React fundamentals
introduction to components
component oriented architecture
what components ?
environment setup for react and react native
build workflow
React basics
hello world react app
creating functional component
creating dynamic output
component lifecycle
debugging react application
working with props
styling react component
Introduction to state management
rules of state management
initializing state through constructors
updating state properties
app lifecycle
handling errors

Introduction to Redux
why redux?
pros and cons
redux architecture
actions
store
reducers
Advanced Redux concepts and integration
connecting react to redux
mapStateToProps
mapDispatchToProps
async in redux
async status and error handling
Basic and advanced Routing
introduction to routing
root level routing
child level routing
React hooks
what is hook?
rules of hook
using state hook
using effect hook
building custom hook
Handling online payment
connecting react with online payment gateway
Testing React components
testing overview
setting up environment
testing react components
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Pre-requisites:

Object Oriented Programming Concepts
Any RDBMS (SQL)
Web Programming Fundamentals (HTML, CSS, JS)
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Batch schedule

Sr.No Batch Code Start Date End Date Time
1 MERN-O-03 02-Jun-2025 03-Jul-2025 09:00 PM To 11:00 PM

Schedule : Mon-Thu
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COURSES

Course Information

Batch Schedule : 24-Nov-2025 To 05-Dec-2025

Schedule : Monday to Friday (9pm to 11pm)

Duration : 2 weeks

Timings : 9:00 PM To 11:00 PM

Fees : Rs. 8000/- Special Offer for Sunbeam Alumni 5900

Prerequisites:

Python Libraries: numpy, pandas, matplotlib, sci-kit learn, pytorch

SCM: git

CI/CD Pipeline:

Jenkins and GitHub Actions: scripted pipeline configuration

Containerization:

Docker: installation and configuration, building custom images, containers, volumes, networks, port forwarding

Container Orchestration:

Kubernetes: cluster management, namespaces, pods, policies, services, configmap, secrets, networking, storage, autoscaling

Cloud:

AWS: EC2, ELB, Autoscaling, VPC, S3, Lambda, DevOps on AWS

Infrastructure as a code:

Terraform: AWS infrastructure management

Model building using scikit-learn and pytorch or tensorflow

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Syllabus:

Experiment Tracking: MLFlow, Weights and Biases

Data and model versioning: dvc and LakeFS

Containerization of models: Docker

MLOps Pipeline: KubeFlow and MLFlow

Model serving: KServe, Tensorflow Serving

CI/CD for MLOps: Jenkins and GitHub Actions

Observability: ELK

Monitoring: Prometheus and Grafana

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VIdeo recording will be available till 05 March 2026 on SunBeam Portal

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Batch schedule

Sr.No Batch Code Start Date End Date Time
1 MLOps and LLMOps (O-01) 24-Nov-2025 05-Dec-2025 9:00 PM To 11:00 PM
Schedule : Monday to Friday (9pm to 11pm)
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COURSES

Course Information

Batch Schedule : 23-Jan-2026 To 20-Feb-2026
Schedule : Mon - Fri
Duration : 50 hrs.
Timings : 8:00 AM To 10:30 AM
Fees : Rs. 6800/-

Prerequisite:

Any programming language
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Highlights:

Live hands-on approach
Builds foundation for Machine Learning/Data science
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Syllabus:

Python Fundamentals and Environment Setup
Introduction to Python
Applications of Python in Machine Learning, Backend, Automation
Installing Python on Windows, macOS, Linux
Python interpreters and virtual environments
Running Python programs
Script mode vs interactive mode
Basic coding standards and best practices
Core Python Syntax and Data Types
Variables and naming conventions
Built-in data types: int, float, complex, bool, string
Type conversion and type checking
Input and output operations
Understanding Python memory basics
Control Flow and Decision Making
if, elif, else statements
Nested conditions
Logical and comparison operators

Real-world decision-making examples
Loops and Iterations
for loop
while loop
range function
break, continue, pass
Nested loops
Common looping patterns
Python Data Structures
Lists
Creation, indexing, slicing
List operations and methods
List comprehensions
Tuples
Tuple creation
Tuple vs list
Use cases and immutability
Sets
Set creation
Set operations
Mathematical set concepts
Dictionaries
Key-value pairs
CRUD operations
Nested dictionaries
Handling JSON-like data
Strings and Text Processing
String operations
Common string methods
String formatting using f-strings
Text manipulation and cleaning basics
Functions and Modular Programming
Defining and calling functions
Function arguments: positional, keyword, default
args and kwargs
Return values
Scope: local and global
Creating reusable modules
Object-Oriented Programming in Python
OOP concepts and importance
Classes and objects
Constructors
Instance variables and class variables

Methods
Encapsulation
Inheritance
Polymorphism
Introduction to magic methods
Real-world OOP examples
Error Handling and Debugging
Types of errors in Python
try, except, else, finally
Creating custom exceptions
Debugging techniques
Writing robust code
File Handling and Data Input Output
Reading and writing text files
Working with CSV files
Working with JSON files
File handling best practices
Introduction to logging
Working with Dates, Time and Utilities
Datetime module
Time module
Date formatting and parsing
Timestamps and timers
Python Standard Library Overview
os and sys modules
math and random modules
collections module
itertools introduction
Useful built-in functions
Introduction to Data Handling for Machine Learning
Importance of data in ML
Introduction to NumPy: Arrays and vectorized operations
Introduction to Pandas: DataFrames and Series
Reading datasets
Basic data exploration and cleaning
Python for Backend Development Foundations
Role of Python in backend systems
Basics of HTTP and REST APIs
Introduction to Flask and FastAPI concepts
Request and response lifecycle
JSON handling in backend
Basic database interaction concepts

Database connectivity

Introduction to MySQL and SQLite

Database design basics (tables, rows, columns, keys)

CRUD operations using SQL

Connecting Python with databases

Using Python database connectors

Executing queries from Python

Handling database transactions

Error handling in database operations

Mini Project

Data-oriented mini project for ML foundation

Backend-oriented mini project using Python logic

Emphasis on clean code and problem-solving

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Student Feedback:

The course content was well-structured and covered all the essential topics needed to build a solid foundation in Python programming. What stood out the most for me was the clarity with which the concepts were explained. Sir went above and beyond by covering additional topics that were incredibly valuable. I now feel much more confident in my Python skills, thanks to this course.

I can genuinely say it was one of the most enriching learning experiences I ve had. I was referred by a colleague to join SUNBEAM, I wasn t entirely sure what to expect initially, but from the very first session, it became clear that I was in the hands of an exceptional teacher. Sir has an extraordinary talent for simplifying even the most complex Python concepts, making them easy to grasp for all students.

His explanations are consistently clear, and he demonstrates remarkable patience, ensuring that every question is answered thoroughly and that no one is left behind. What truly stood out to me was his practical approach to teaching beyond just theory, he provided real-world examples that made it easy to see how Python could be applied in my professional work. Sir's dedication to his students is truly admirable.

I now feel confident in my Python skills and am eager to apply what I ve learned in my career. His teaching style, depth of knowledge, and unwavering support are truly exceptional, and I feel very fortunate to have had the opportunity to be taught by him.

To be honest, Python was my first authentic experience of learning programming language and this

experience was made memorable by you sir. Older me was saying programming is soo boring, soo complicated, an headache. But sir you totally changed my perspective. Now, I have gained confidence

that I too can develop applications.

You just have not only taught us python, You taught insights of python. how python works internally. I never ever trained like this before. You showed the way how to look at concepts insights just not syntax. Its Conceptual + Insights + syntactical Training I got. My words are not enough to express the gratitude but still to get teacher like you needs luck also.

The quizzes at the end of each module were also a great way to test my knowledge. The Q&A; sessions 15-20 mins before and after each lecture added more value to it. The example of "Potter and Stencils" was amazing to understand the difference between "Java and Pythons class". Similarly the example of (2 or more) parallel projects while teaching the concept of working with "Virtual Environment" was amazing.

Request the sunbeam management to please start such courses for Ex-CDAC students which helps the CDAC family to grow and show what the CDAC pupils can do with CDAC gurus showing us the way ahead. It would be needless to praise our CDAC guru s knowledge. Teaching methodologies as doing classes from US at 4:30 am PST time I always had a smile on my face a kid like zeal to learn what Sir would bring to the table that day and by end of min 2:30 hrs of a lecture he would leave us in awe. I would say CDAC sunbeam is not an institutional at all, it more of a Gurukul where the pupils are lifelong connected to the Gurus here at Sunbeam like Nilesh Sir,(for motivating when I was about to quit CDAC coming from ECE background), Prashant Sir, Vijay Sir, Sameer Sir(had a magical experience when he taught us in 2011 Feb) , Sarang Sir(never thought that Software engineering subject could be fun and also be taught)

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Recorded videos will be accessible for up to one month from the date of upload.

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Batch schedule

Sr.No Batch Code Start Date End Date Time

1 Python-O-15 23-Jan-2026 20-Feb-2026 8:00 AM To 10:30 AM

Schedule : Mon - Fri

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