

# AIDM

## Advanced Python Course Syllabus

With Django Framework



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# Python Course

## Python Training Course Topics:

An Overview of Python  
Running Python Scripts  
Flow Control  
Sequence Data  
Defining Functions  
Working with Files

### 1. An Overview of Python

#### What is Python?

- History of Python
- Python Features

### 2. Python Environment Setup

- Local Environment Setup
- Getting Python
- Running Python
- Setting up PATH
- Setting Path at Unix/Linux
- Setting Path at Windows
- Python Environment Variables

### 3. Python Basic Syntax

- First Python Program
- Python Identifiers
- Reserved Words
- Lines and Indentation
- Multi-Line Statements
- Parsing Command-Line Arguments

### 3. Python Basic Syntax

- Quotation in Python
- Comments in Python
- Using Blank Lines
- Waiting for the User
- Multiple Statements on a Single Line
- Multiple Statement Groups as Suites
- Command Line Arguments



## Python Course

### Python Training Course Topics: An Overview of Python Running Python Scripts Flow Control

#### 4. Python Variable Types

- Assigning Values to Variables
- Multiple Assignment
- Standard Data Type
- Python Numbers
- Python String
- Python Lists
- Python Tuples
- Python Dictionary
- Data Type Conversion

#### 5. Python Basic Operators

- Types of Operator
- Python Arithmetic Operators
- Python Comparison Operators
- Python Assignment Operators
- Python Bitwise Operators
- Python Logical Operators
- Python Membership Operators
- Python Identity Operators
- Python Operators Precedence

#### 6. Python Decision Making

- IF Statement
- IF...ELIF...ELSE Statements
- Nested IF Statements
- Single Statement Suites

#### 7. Python Loops

- while Loop Statements
- for Loop Statements
- Nested loops
- Loop Control Statements
- Continue Statement
- pass Statement
- Iterator and Generator
- break statement



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## 8. Python Numbers

- Mathematical Functions
- Number abs() Method
- Number ceil() Method
- Number floor() Method
- Number fabs() Method
- Number log() Method
- Number log10() Method
- Number max() Method
- Number modf() Method
- Number round() Method
- Number sqrt() Method
- Random Number Functions
- Number choice() Method
- Number randrange() Method
- Number random() Method
- Number seed() Method
- Number shuffle() Method
- Number uniform() Method
- Trigonometric Functions
- Number acos() Method
- Number asin() Method
- Number atan() Method
- Number atan2() Method
- Number cos() Method
- Number hypot() Method
- Number sin() Method
- Number tan() Method
- Number degrees() Method
- Number radians() Method
- Mathematical Constants



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## 9. Python Strings

- Accessing Values in Strings
- Updating Strings
- Escape Characters
- String Special Operators
- String Formatting Operator
- Triple Quotes
- Unicode String
- String capitalize() Method
- String center() Method
- String count() Method
- String decode() Method
- String encode() Method
- String endswith() Method
- String expandtabs() Method
- String find() Method
- String index() Method
- String isalnum() Method
- String isalpha() Method
- String isdigit() Method
- String islower() Method
- String isnumeric() Method
- String isspace() Method
- String istitle() Method
- String join() Method
- String len() Method
- String ljust() Method
- String lower() Method
- String lstrip() Method
- String maketrans() Method
- String max() Method
- String min() Method
- String replace() Method
- String rfind() Method
- String rindex() Method



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## 9. Python Strings

- String rjust() Method
- String.rstrip() Method
- String.split() Method
- String.splitlines() Method
- String.startswith() Method
- String.strip() Method
- String.swapcase() Method
- String.title() Method
- String.translate() Method
- String.upper() Method
- String.zfill() Method
- String.isdecimal() Method

## 10. Python Lists

- Python Lists
- Accessing Values in Lists
- Updating Lists
- Delete List Elements
- Basic List Operation
- Indexing, Slicing and Matrixes
- Built-in List Functions & Methods
- List len() Method
- List max() Method
- List min() Method
- List list() Method
- List.append() Method
- List.count() Method
- List.extend() Method
- List.index() Method
- List.insert() Method
- List.pop() Method
- List.remove() Method
- List.reverse() Method
- List.sort() Method



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## 11. Python Tuple

- Accessing Values in Tuples
- Updating Tuples
- Delete Tuple Elements
- Basic Tuples Operations
- Indexing, Slicing, and Matrixes
- No Enclosing Delimiters
- Built-in Tuple Functions
- Tuple len() Method
- Tuple max() Method
- Tuple min() Method
- Tuple tuple() Method

## 12. Python Dictionary

- Accessing Values in Dictionary
- Updating Dictionary
- Delete Dictionary Elements
- Properties of Dictionary Keys
- Built-in Dictionary Functions & Methods
- Dictionary len() Method
- Dictionary str() Method
- Dictionary type() Method
- Dictionary clear() Method
- Dictionary copy() Method
- Dictionary fromkeys() Method
- Dictionary get() Method
- Dictionary items() Method
- Dictionary keys() Method
- Dictionary setdefault() Method
- Dictionary update() Method
- Dictionary values() Method



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## 13. Python Date & Time

- What is Time
- What is TimeTuple?
- Getting current time
- Getting formatted time
- Getting calendar for a month
- The time Module
- Time altzone() Method
- Time asctime() Method
- Time clock() Method
- Time ctime() Method
- Time gmtime() Method
- Time localtime() Method
- Time mktime() Method
- Time sleep() Method
- Time strftime() Method
- Time strptime() Method
- Time time() Method
- Time tzset() Method
- The calendar Module
- Other Modules & Functions

## 14. Python Functions

- Defining a Function
- Calling a Function
- Pass by Reference vs Value
- Function Arguments
- Required Argument
- Keyword Arguments
- Default Arguments
- Variable-length Arguments
- The Anonymous Functions
- The return Statement
- Global vs. Local variables





## Python Course

### Python Training Course Topics: An Overview of Python Running Python Scripts Flow Control

## 15. Python Modules

- The import Statement
- The from import Statement
- The from...import \* Statement:
- Executing Modules as Scripts
- Locating Modules
- The Python Path Variable
- Namespaces and Scoping
- The dir( ) Function
- The globals() and locals() Functions
- The reload() Function
- Packages in Python

## 16. Python Files I/O

- Printing to the Screen
- Reading Keyboard Input
- The input Function
- Opening and Closing Files
- The open Function
- The file Object Attributes
- The close() Method
- Reading and Writing Files
- The write() Method
- The read() Method
- File Positions
- Renaming and Deleting Files
- The rename() Method
- The remove() Method
- Directories in Python
- The mkdir() Method
- The chdir() Method
- The getcwd() Method



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## 16. Python Files I/O

- The rmdir() Method
- File & Directory Related Methods
- File Methods
- File close() Method
- File flush() Method
- File fileno() Method
- File isatty() Method
- File next() Method
- File read() Method
- File readline() Method
- File readlines() Method
- File seek() Method
- File tell() Method
- File truncate() Method
- File write() Method
- File writelines() Method
- OS File/Directory Methods
- Os.access() Method
- Os.chdir() Method
- Os.chflags() Method
- Os.chmod() Method
- Os.chown() Method
- Os.chroot() Method
- Python os.close() Method
- Os.closerange() Method
- Os.dup2() Method
- Os.dup() Method
- Os.fchdir() Metho
- Os.fchmod() Method
- Os.fchown() Method
- Os.fdatasync() Method
- Os.fdopen() Method
- Os.fpathconf() Method
- Os.fstat() Method
- Os.fstatvfs() Method
- Os.fsync() Method



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## 16. Python Files I/O

- Os.ftruncate() Method
- Os.getcwd() Method
- Os.getcwdu() Method
- Os.isatty() Method
- Os.lchflags() Method
- Os.lchown() Method
- Os.link() Method
- Os.listdir() Method
- Os.lseek() Method
- Os.lstat() Method
- Os.major() Method
- Os.makedev() Method
- Os.makedirs() Method
- Os.minor() Method
- Os.mkdir() Metho
- Os.mkfifo() Method
- Os.open() Method
- Os.openpty() Method
- Os.pathconf() Method
- Os.pipe() Method
- Os.popen() Method
- Os.read() Method
- Os.readlink() Method
- Os.chroot() Method
- Os.remove() Metho
- Os.removedirs() Method
- Os.rename() Method
- Os.renames() Method
- Os.renames() Method
- Os.rmdir() Method
- Os.stat() Method
- Os.stat\_float\_times() Method
- Os.statvfs() Method
- Os.symlink() Method
- Os.tcgetpgrp() Method
- Os.tcsetpgrp() Method



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## 16. Python Files I/O

- Os.tempnam() Method
- Os.tmpfile() Method
- Os.tmpnam() Method
- Os.ttyname() Method
- Os.unlink() Method
- Os.utime() Method
- Os.walk() Method
- Os.write() Method

## 17. Python Exceptions Handling

- Standard Exceptions
- Assertions in Python
- What is Exception?
- Handling an Exception
- The except Clause with No Exceptions
- The except Clause with Multiple Exceptions
- The try-finally Clause
- Argument of an Exception
- Raising an Exception
- User-Defined Exceptions



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## 18. Python Object Oriented

- Overview of OOP Terminology
- Creating Classes
- Creating Instance Objects
- Accessing Attributes
- Built-In Class Attributes
- Destroying Objects (Garbage Collection)
- Class Inheritance
- Overriding Methods
- Base Overloading Methods
- Overloading Operators
- Data Hiding

## 19. Python Regular Expressions

- The match Function
- The search Function
- Matching Versus Searching
- Search and Replace
- Regular Expression Modifiers: Option Flags
- Regular Expression Patterns
- Regular Expression Examples
- Character classes
- Special Character Classes
- Repetition Cases
- Nongreedy Repetition
- Grouping with Parentheses
- Backreferences
- Alternatives
- Anchors
- Special Syntax with Parentheses



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## 20. Python MySQL Database Access

- What is PyMySQL?
- How do I Install PyMySQL?
- Database Connection
- Creating Database Table
- INSERT Operation
- READ Operation
- Update Operation
- DELETE Operation
- Performing Transactions
- COMMIT Operation
- Rollback Operation
- Disconnecting Database
- Handling Errors



# Django Framework

## Django Framework Course Modules

### Module 1: Introduction to Django

- Django components
- How to install and Configure Django components

### Module 2: How to create Django views

- Django components
- Using Django's HttpResponse Class
- Understanding HttpRequest Objects
- Using QueryDict Objects

### Module 3: Configuring URLconf's

- About URLconf
- Regular Expressions
- Simple URLConf Examples
- Using Multiple URLConf's
- Passing URL Arguments



# Django Framework

## Django Framework Course Modules

### Module 4: Django Templates

- Template Fundamentals
- Creating Template Objects
- Loading Template Files
- Filling in Template Content (Context Objects)
- Template Tags
- Template Filters
- More on For Loops
- Template Inheritance
- Easy Rendering of Templates)
- Request Context Processors
- Global Context Processors

### Module 5: Django Forms

- Form classes
- Validation
- Authentication
- Advanced Forms processing techniques





# Django Framework

## Django Framework Course Modules

### Module 6: Django and REST APIs

- Django REST framework
- Django-piston

### Module 7: Unit testing with Django

- Using Python's unittest2 library)
- Test
- Test Databases
- Doctests
- Debugging

### Module 8: Database models

- About Database Models
- Understanding Django Apps
- Configuring Django for Database Access
- About Django Models
- Defining Django Modelst
- Understanding Model Fields & Options



# Django Framework

## Django Framework Course Modules

### Module 8: Database models

- Table Naming Conventions
- Creating A Django Model
- Adding the App to Your Project
- Validating the App
- Generating & Reviewing the SQL)
- Adding Data to the Model
- Primary Keys and the Model
- Simple Data Retrieval Using a Model
- Understanding QuerySets
- Applying Filters
- Lookup Types
- ASlicing QuerySets
- Deleting Records
- Managing Related Records
- Retrieving Related Records
- Using Q Objects
- Creating Forms from Models



# Django Framework

## Django Framework Course Modules

### Module 9: Using Django Admin Interface

- Enabling the Admin Interface
- Creating an Admin User

### Module 10: Access Control with Sessions and Users

- Cookies & Django
- The Django Session Framework
- Sessions in Views
- Session Tuning
- Installing Django User Authentication)
- Using Authentication in Views
- Login and Logout
- Building your Own Login/Logout Views
- Authentication Decorators
- Adding & Deactivating Users
- Asynchronous Messaging
- Managing Permissions



# Django Framework

## Django Framework Course Modules

### Module 11: Generic Views

- Simple Generic Views
- Using Generic Redirects
- Other Generic Views
- Create/Update/Delete Generic views

### Module 12: Data Caching for Performance

- Data Caching
- Setting up Per-View Caching

### Module 13: Django's Email Functionality

- Configuring Mail Settings
- Sending Email
- Other Email Functions

### Module 14: Deploying Django Applications

- Deploying Django Applications



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