

SKILL DIPLOMA IN PYTHON DJANGO REACT FULLSTACK

LEARN FULL STACK,
LAND YOUR DREAM
JOB

EARN
&
LEARN

django



React

python

DURATION

Skill Diploma - 5 - 6 months

Internship - 1 month

1 year plan is also available, along with a professional company experience certificate.

ADMISSION

OPEN



PROGRAMMING FOUNDATIONS

- What is Programming
- Programming Languages Overview
- Why Python
- How Computers Execute Code
- Compiler vs Interpreter
- Algorithms
- Python Installation & Setup
- IDEs & Editors
- Errors & Debugging
- Syntax Basics

CONTROL FLOW

- Conditional Statements (if, elif, else)
- Nested Conditions
- Logical Decision Making
- Loops (for, while)
- Loop Control (break, continue, pass)
- Nested Loops

DATA STRUCTURES

- Strings
- Lists
- Tuples
- Sets
- Dictionaries

PYTHON BASICS (CORE SYNTAX)

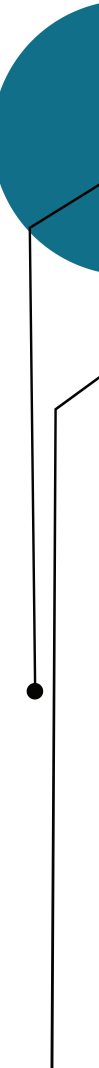
- Variables
- Data Types
- Type Casting
- Operators (Arithmetic, Assignment)
- Comparison Operators
- Logical Operators
- Input & Output
- String Formatting
- Comments

FUNCTIONS

- Function Definition & Calling
- Parameters & Arguments
- Return Values
- Default & Keyword Arguments
- *args and **kwargs
- Scope (Local & Global)
- Lambda Functions
- Recursion
- Nested Functions

OBJECT-ORIENTED PROGRAMMING (OOP)

- Classes & Objects
- Attributes & Methods
- Constructor (.__init__)
- Encapsulation
- Abstraction
- Inheritance
- Polymorphism



ADVANCED OOP & ERROR HANDLING

- Class vs Instance Variables
- Static & Class Methods
- Magic Methods (`__str__`, `__repr__`)
- Composition vs Inheritance
- Exception Handling (`try`, `except`, `finally`)
- Custom Exceptions
- Raising Errors

MODULES & PYTHONIC CODING

- Modules & Imports
- Packages
- Virtual Environments
- pip & Dependency Management
- Iterators & Generators
- List/Dict/Set Comprehensions
- `map()`, `filter()`, `reduce()`
- Clean Code & PEP 8

PROJECTS & APPLICATIONS

- Calculator Application
- Number Guessing Game
- Student Management System
- To-Do List Application
- Bank Account System
- Library Management System
- Inventory Management
- Expense Tracker
- Portfolio & GitHub

FILE HANDLING & OS INTERACTION

- File Operations (read, write, append)
- File Modes
- CSV Handling
- JSON Handling
- OS Module
- File Paths & System Operations

PROMPT ENGINEERING BASICS

- How to ask AI correctly:
 - Clear instructions
 - Provide context
 - Ask step-by-step solutions

DJANGO CURRICULUM

WEB & DJANGO FOUNDATIONS

- What is Django
- Web Applications
- Client-Server Architecture
- HTTP Basics
- MVT Architecture
- Request-Response Lifecycle
- Virtual Environments
- Django Installation
- Project & App Structure

PROJECT SETUP & CONFIGURATION

- settings.py
- INSTALLED_APPS
- MIDDLEWARE
- URLs & Routing
- Views (FBV)
- HTTP Methods (GET, POST)
- Dynamic URLs
- Environment Settings

TEMPLATES & STATIC FILES

- Django Templates
- Template Rendering
- Template Tags & Filters
- Template Inheritance
- Includes
- Static Files (CSS, JS, Images)

MODELS & ORM

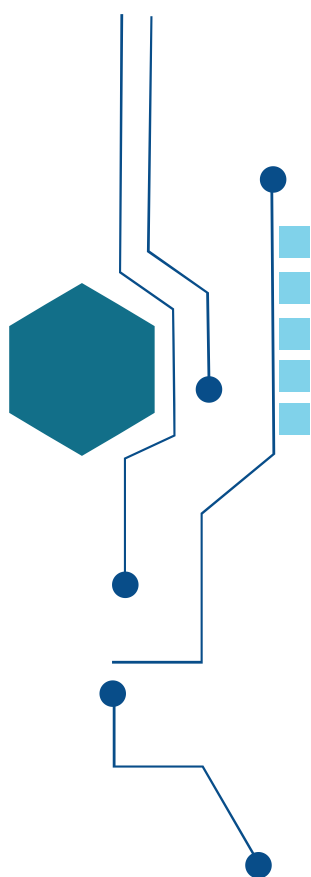
- Models
- ORM
- Migrations
- Django Shell
- CRUD Operations
- Model Relationships

DJANGO ADMIN PANEL

- Admin Setup
- Model Registration
- Admin Customization
- Admin Forms
- Inline Models
- Admin Permissions

FORMS & USER INPUT

- Django Forms
- Form Validation
- ModelForm
- CRUD with Forms
- File Uploads
- Media Configuration



AUTHENTICATION & AUTHORIZATION

- User Model
- Authentication
- Login & Logout
- Signup
- Permissions
- Groups & Roles

MIDDLEWARE & ADVANCED ORM

- Middleware
- Custom Middleware
- Query Optimization
- select_related
- prefetch_related
- Aggregation
- Annotation
- F & Q Objects

TESTING & DEBUGGING

- Django Testing
- TestCase
- View Testing
- Form Testing
- Debugging Tools
- Logging
- Error Handling

CLASS-BASED VIEWS (CBV)

- CBV Basics
- TemplateView
- ListView
- DetailView
- CreateView
- UpdateView
- DeleteView
- Mixins

FILE HANDLING & SECURITY

- Media Files
- File Uploads
- Validation
- Security (CSRF, XSS, SQL Injection)
- Caching
- Performance Optimization

AI TOOLS FOR DJANGO DEVELOPERS

- GitHub Copilot
 - Auto-generate Django models, views, serializers
 - Speed up CRUD development
- ChatGPT
 - Debug Django errors
 - Explain ORM queries
- Google Gemini
 - Alternative for logic explanation & documentation
- DeepSeek
 - Strong for backend logic & optimization



DEPLOYMENT & PRODUCTION

- Production Setup
- Gunicorn
- Nginx
- Static & Media Deployment
- Docker
- CI/CD
- Monitoring & Scaling

PROJECT ARCHITECTURE & CAPSTONE

- App Modularization
- Django Signals
- Service Layer
- Enterprise Structure
- Capstone Project
- Testing & Optimization
- Documentation & GitHub

DRF / API CURRICULUM

API & REST FUNDAMENTALS

- What is API
- API Lifecycle
- REST Architecture
- HTTP Methods
- HTTP Status Codes
- JSON Format
- API Testing (Postman)
- Introduction to DRF

SERIALIZERS

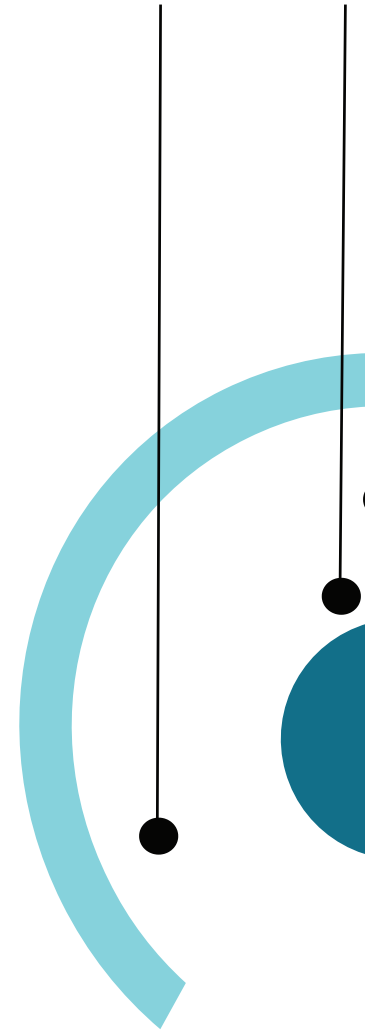
- Serializer Basics
- ModelSerializer
- Serialization & Deserialization
- Validation
- create() & update()
- Serializer Context
- Nested Serializers
- SerializerMethodField

API VIEWS

- APIView
- GET, POST, PUT, PATCH, DELETE
- Function-Based API Views (@api_view)
- Request & Response Objects
- Error Handling
- API Response Structure

GENERIC VIEWS & VIEWSETS

- GenericAPIView
- Mixins
- ListCreateAPIView
- RetrieveUpdateDestroyAPIView
- ViewSets
- ModelViewSet
- Routers
- Custom Actions



AUTHENTICATION

- Authentication vs Authorization
- Session Authentication
- Token Authentication
- JWT Authentication
- Login & Logout
- User Registration
- Auth Best Practices

ADVANCED SERIALIZATION & FILE APIS

- Nested Create & Update
- Dynamic Fields
- Custom Representation
- File Upload APIs
- Image Upload
- Advanced Validation
- Global Exception Handling

API DOCUMENTATION & TESTING

- Swagger / OpenAPI
- API Documentation
- API Testing
- TestCase & APIClient
- CORS
- API Security

API PERFORMANCE & OPTIMIZATION

- Query Optimization
- select_related
- prefetch_related
- Throttling
- Rate Limiting
- Caching
- API Versioning

PERMISSIONS & AUTHORIZATION

- Built-in Permissions
- Custom Permissions
- Object-Level Permissions
- Filtering
- Searching
- Ordering
- Pagination

AI TOOLS FOR API DEVELOPERS

- GitHub Copilot
 - Auto-generate serializers, views, ViewSets
 - Speed up CRUD API development
- ChatGPT
 - Generate DRF APIs
 - Debug errors (400, 401, 403, 500)
 - Explain serializers & ORM
- Google Gemini
 - Alternative for API design & logic explanation
- DeepSeek
 - Strong for backend-heavy logic & optimization
- Claude

Best for:

- Large codebase understanding
- Writing clean APIs
- Documentation & architecture
- Antigravity IDE
 - AI-integrated coding environment
 - Faster development workflow

PRACTICAL AI USAGE IN DRF

API GENERATION

- Generate:
- Serializers
- ViewSets
- Routers
- Pagination & Filters

AI FOR AUTHENTICATION SYSTEMS

- Generate:
 - JWT login/register APIs
 - Token refresh logic
 - Role-based access

API OPTIMIZATION USING AI

- Improve:
 - Query performance
 - Serializer efficiency
 - Reduce DB hits

API OPTIMIZATION USING AI

- Suggest:
 - `select_related` / `prefetch_related`
 - Caching strategies

AI FOR TESTING

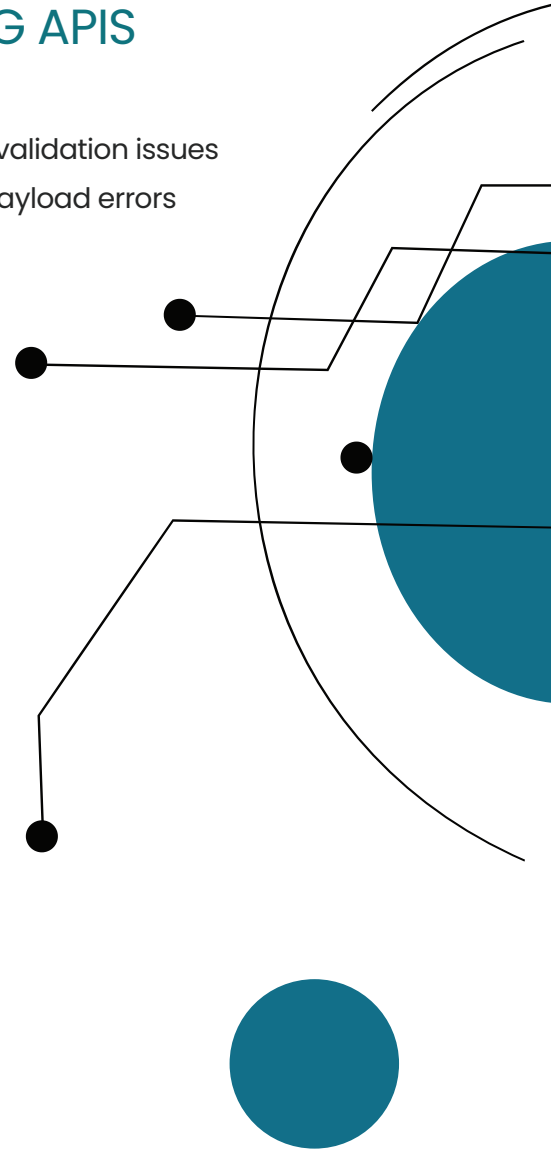
- Generate
 - Test cases
 - APIClient tests
 - Edge case scenarios

DEBUGGING APIS

- Fix:
 - 400 Bad Request
 - 401 Unauthorized
 - 403 Forbidden
 - 500 Server Errors

DEBUGGING APIS

- Analyze:
 - Serializer validation issues
 - Request payload errors



CAPSTONE PROJECT & PRODUCTION

- API Design & Architecture
- CRUD APIs
- Authentication Integration
- Filtering & Pagination
- Testing & Documentation
- Performance Optimization
- Deployment Preparation

POSTGRESQL / SQL CURRICULUM

DATABASE FUNDAMENTALS

- Data & Databases
- Structured vs Unstructured Data
- Types of Databases (SQL vs NoSQL)
- What is SQL
- PostgreSQL Introduction
- Database Tools (psql, pgAdmin)
- Database & Schema Concepts

SQL CORE (CRUD)

- Data Types
- CREATE TABLE
- INSERT
- SELECT
- UPDATE
- DELETE
- NULL Handling
- ALTER TABLE

FILTERING & CONDITIONS

- WHERE Clause
- Comparison Operators
- Logical Operators
- LIKE & ILIKE
- IN & BETWEEN
- ORDER BY
- LIMIT & OFFSET
- DISTINCT

CONSTRAINTS & DATA INTEGRITY

- Roles & Users
- Permissions (GRANT, REVOKE)
- Schema Security
- Row-Level Security
- Backup & Restore
- Production Setup
- Monitoring



RELATIONSHIPS & JOINS

- One-to-One
- One-to-Many
- Many-to-Many
- INNER JOIN
- LEFT JOIN
- RIGHT JOIN
- FULL JOIN
- Self JOIN
- Subqueries

AGGREGATIONS & GROUPING

- COUNT, SUM, AVG, MIN, MAX
- GROUP BY
- HAVING
- Aggregation with JOINS
- CASE WHEN
- Window Functions
- ROW_NUMBER, RANK

PERFORMANCE & OPTIMIZATION

- Indexes
- Query Optimization
- EXPLAIN & ANALYZE
- Views
- Materialized Views
- Sequences & SERIAL
- UUID
- JSONB & Arrays

TRANSACTIONS & ADVANCED FEATURES

- Transactions (BEGIN, COMMIT, ROLL-BACK)
- ACID Properties
- Isolation Levels
- Locking
- Functions
- Stored Procedures
- Triggers
- Audit Logging

SECURITY & BACKUP

- Roles & Users
- Permissions (GRANT, REVOKE)
- Schema Security
- Row-Level Security
- Backup & Restore
- Production Setup
- Monitoring



ADVANCED POSTGRESQL & APPLICATIONS

- PostgreSQL with Django
- JSON & JSONB
- Full-Text Search
- Partitioning
- Foreign Data Wrappers
- Advanced Query Patterns

REACT

(HTML + CSS)

1: HTML BASICS

- Web fundamentals, HTML structure
- Tags, elements, attributes
- Text formatting, lists
- Links, images

3: CSS BASICS

CSS syntax, selectors

Colors, units, typography

Box model

(JAVASCRIPT CORE)

5: JS BASICS

V- ariables, data types

- Operators, conditionals

7: JS ADVANCED

- Objects, destructuring
- Array methods (map, filter, reduce)
- Strings, template literals

CAPSTONE & PRODUCTION

- Database Design
- Normalization
- ER Diagrams
- Complex Queries
- Reporting
- Optimization
- Security
- Docker & Deployment

2: HTML ADVANCED

- Tables, forms, inputs
- Media (audio/video/iframe)
- Semantic HTML
- Accessibility basics

4: CSS LAYOUT

- Flexbox
- Grid
- Positioning
- Responsive design (media queries)

6: JS FUNCTIONS & LOOPS

- Functions, scope
- Loops (for, while)
- Arrays basics

8: DOM & ASYNC JS

1. DOM manipulation
2. Events
3. setTimeout / setInterval
4. Promises, fetch, async/await

(REACT)

9: REACT BASICS

- React intro, setup (Vite)
- JSX, components

11: RENDERING LOGIC

- Conditional rendering
- Lists & keys

13: ROUTING & API

- React Router
- API calls

AI USAGE :

1. Debugging help
2. Concept explanation

10: PROPS & STATE

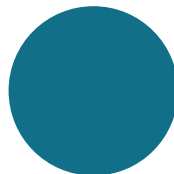
- Props, state (useState)
- Event handling

12: HOOKS & FORMS

- useEffect
- Forms handling

14: ADVANCED REACT

- Context API
- Performance basics
- Mini project



WHY TECHNO DOT ACADEMY ?

Techno Dot Academy is a career-focused IT training institute dedicated to building job-ready professionals through practical, industry-oriented learning. With expert mentors, real-time project exposure, and a curriculum aligned to current market demands, the academy helps students develop strong technical and problem-solving skills. Techno Dot Academy also emphasizes career growth by providing guidance, support, and placement assistance, making it a trusted choice for those looking to start or advance their journey in the IT field.



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& Internship



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by a Reputed
IT Firm



Scholarships/
Earn While Learn
Option



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