



TECHNOCATION FREELANCING TRAINING INSTITUTE & SOFTWARE HOUSE

# Professional Django Course Outline

## Module 1: Introduction to Django & Web Development

- Overview of Django & Its Features
  - Understanding the MVC (Model-View-Controller) & MVT (Model-View-Template) Architecture
  - Setting Up a Django Development Environment (Python, Virtual Environments, Pip)
  - Creating a Django Project & Running the Development Server
  - Understanding Django Project Structure
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## Module 2: Django Models & Database Handling

- Introduction to Django ORM (Object-Relational Mapping)
  - Creating & Managing Models (`models.py`)
  - Defining Fields & Relationships (`ForeignKey`, `OneToOneField`, `ManyToManyField`)
  - Performing Migrations (`makemigrations`, `migrate`)
  - Querying the Database (`filter()`, `get()`, `exclude()`, `aggregate()`)
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## Module 3: Django Views & URL Routing

- Understanding Views (function-based views, class-based views)
  - Mapping URLs to Views (`urls.py`)
  - Using Dynamic URL Patterns & Path Converters
  - Handling HTTP Requests & Responses (GET, POST, PUT, DELETE)
  - Redirects & Custom Error Pages (404, 500)
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## Module 4: Django Templates & Frontend Integration

- Introduction to Django Templates & Template Engine
  - Template Tags & Filters (`{% if %}`, `{% for %}`, `{% include %}`)
  - Working with Static Files (CSS, JavaScript, Images)
  - Integrating Bootstrap & TailwindCSS in Django
  - Creating Dynamic Web Pages with Context Data
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## Module 5: Django Forms & User Input Handling

- Creating & Processing Forms (`forms.py`)
  - Handling Form Validations & Error Messages
  - Working with Model Forms & Form Widgets
  - Implementing File Uploads in Django
  - Protecting Forms from CSRF Attacks
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## Module 6: Django Authentication & User Management

- User Registration & Login System (`django.contrib.auth`)
  - Implementing Logout & Password Reset Functionality
  - User Groups & Permissions (`is_authenticated`, `@login_required`)
  - Customizing Django's Authentication System
  - Creating a Custom User Model
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## Module 7: Django Admin Panel & Management

- Customizing Django Admin Interface (`admin.py`)
  - Registering Models in Django Admin
  - Managing Users, Permissions & Groups in Admin Panel
  - Adding Custom Filters & Search Functionality in Admin
  - Handling Bulk Operations from Django Admin
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## Module 8: Django REST Framework (DRF) for API Development

- Introduction to RESTful APIs & Django REST Framework
  - Creating & Managing API Views (APIView, ViewSet, ModelViewSet)
  - Working with Serializers (`serializers.py`)
  - Handling API Authentication (JWT, Token, Session Authentication)
  - Implementing CRUD Operations in APIs
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## **Module 9: Middleware, Caching, & Performance Optimization**

- Understanding Django Middleware & Custom Middleware
  - Working with Django Caching (Memcached, Redis)
  - Query Optimization & Indexing in Django ORM
  - Using Celery for Background Tasks
  - Handling Large Data Processing Efficiently
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## **Module 10: Django Deployment & Security Best Practices**

- Deploying Django Applications on AWS, Heroku, DigitalOcean
  - Setting Up Gunicorn & Nginx for Production
  - Working with PostgreSQL & MySQL in Django
  - Configuring Django for HTTPS & SSL
  - Implementing Security Measures (XSS, SQL Injection, CSRF Protection)
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## **Module 11: Advanced Django Features & Real-World Applications**

- Implementing WebSockets in Django with Django Channels
- Working with Payment Gateways (Stripe, PayPal)
- Building Multi-Tenant Applications in Django
- Creating a Blogging System with Django
- Developing a Full-Stack E-Commerce Website