**Advanced Django**

**Duration:** 3 days

**Overview**

Advanced Django teaches existing Django developers how to create more sophisticated Web applications. This course covers advanced topics as well as advanced use of basic Django features.

**Prerequisites**

Students should already know basic Django development.

**Materials**

Attendees will receive comprehensive course materials covering all topics.

**Software Needed on Each Student PC**

* Python 3
* Django framework (Django 2.x or Django 3.x)
* Other Python extensions
* Non-python libraries
* A Python-compatible IDE (e.g. PyCharm Community Edition)

*Note: a comprehensive setup guide will be provided*

**Objectives**

All students will:

* Take advantage of the built-in Admin interface
* Extend the template system
* Perform advanced database queries
* Implement documentation with Sphinx
* Create testable, reusable apps
* Migrate data
* Cache requests to improve throughput

**Outline**

* Introduction
* Beyond Simple Queries
  + Using fields in queries
  + Non-Django DBMS access
  + Combining Q and F objects
  + Executing raw SQL
* Customizing class-based views
  + Creating base classes
  + Adding metadata
  + Developing mixins
* Database Configuration
  + Using multiple databases
    - Per-app databases
  + Load-sharing among databases
  + Persistent connections
* Enhancing Models
  + Complex relationships
  + Overriding standard methods
  + Custom object methods
  + Replacing the standard manager
    - Custom manager methods
    - Multiple managers
  + Understanding cascading
* Advanced Template Usage
  + Multiple inheritance
  + Alternate delimiters
  + Creating custom filters
  + Automatic HTML escaping
  + Template loading
* Session Management
  + Enabling sessions
  + Types of session backends
  + Session cookies
  + Accessing sessions from views
* Documentation with Sphinx
  + Description of Sphinx
  + reStructured Text
  + Configuring sphinx
  + Creating doc files
  + Using autodoc
  + Generating docs
* Performance
  + Benchmarking and profiling
  + Best practices for DBs
  + Cache options
* Migrations
  + Managed vs unmanaged tables
  + Handling schema changes
  + Using makemigrations and migrate
  + Tweaking migrations
  + Migrating data
* Using the Cache
  + Types of caches
  + Setting up the cache
  + Per-site and per-view caching
  + Low-level API
  + Cache security