

# TRAINING CONTENTS

Session No.	Topics	No. of class hours
1	<b>Module 1: Introduction to Back-End Development</b>  <b>Overview of Back-End Development</b> <ul style="list-style-type: none"> <li>Understanding the role of a back-end developer</li> <li>Key technologies: Servers, databases, and APIs</li> <li>Overview of Python as a back-end language</li> </ul> <b>Development Environment Setup</b> <ul style="list-style-type: none"> <li>Installing Python and pip</li> <li>Setting up a code editor (VSCode, PyCharm)</li> <li>Introduction to version control with Git and GitHub</li> </ul>	3
2	<b>Module 2: Python Basics</b> <ul style="list-style-type: none"> <li>Variables, data types, and operators</li> <li>Control structures (if, for, while)</li> <li>Functions and modules</li> </ul>	3
3	<b>Module 3: Advanced Python (Part 1)</b> <ul style="list-style-type: none"> <li>Object-oriented programming (OOP) concepts</li> <li>Error handling and exceptions</li> <li>Working with files and directories</li> </ul>	3
4	<b>Module 3: Advanced Python (Part 2)</b> <ul style="list-style-type: none"> <li>Object-oriented programming (OOP) concepts</li> <li>Error handling and exceptions</li> <li>Working with files and directories</li> </ul>	3
5	<b>Module 4: Python Standard Library (Part 1)</b> <ul style="list-style-type: none"> <li>Essential libraries (os, sys, datetime, etc.)</li> <li>Installing and managing third-party packages with pip</li> </ul>	3
6	<b>Module 4: Python Standard Library (Part 2)</b>	3

	<ul style="list-style-type: none"> <li>● Essential libraries (os, sys, datetime, etc.)</li> <li>● Installing and managing third-party packages with pip</li> </ul>	
7	<b>Module 5: Introduction to Web Development with Flask</b>  <b>Introduction to Flask</b> <ul style="list-style-type: none"> <li>● What is Flask?</li> <li>● Setting up a Flask project</li> <li>● Basic routing and views</li> </ul>	3
8	<b>Module 6: Flask Templates and Static Files</b> <ul style="list-style-type: none"> <li>● Using Jinja2 for templating</li> <li>● Serving static files (CSS, JS, images)</li> <li>● Template inheritance</li> </ul>	3
9	<b>Module 7: Flask Forms and User Input</b> <ul style="list-style-type: none"> <li>● Handling GET and POST requests</li> <li>● Validating form data</li> <li>● Using Flask-WTF for form handling</li> </ul>	3
10	<b>Module 8: Version Control with Git</b> <b>Git Basics</b> <ul style="list-style-type: none"> <li>● Initializing a repository</li> <li>● Committing changes and managing branches</li> <li>● Merging and resolving conflicts</li> </ul> <b>GitHub Collaboration</b> <ul style="list-style-type: none"> <li>● Creating and managing repositories on GitHub</li> <li>● Pull requests and code reviews</li> <li>● Collaboration workflows</li> </ul>	3
11	<b>Module 9: Building RESTful APIs with Flask</b>  <b>RESTful API Principles</b> <ul style="list-style-type: none"> <li>● Understanding REST architecture</li> </ul>	3

	<ul style="list-style-type: none"> <li>• HTTP methods (GET, POST, PUT, DELETE)</li> </ul>	
12	<b>Module 10: Creating APIs with Flask</b> <ul style="list-style-type: none"> <li>• Setting up API endpoints</li> <li>• Parsing and validating request data</li> <li>• Returning JSON responses</li> </ul>	3
13	<b>Module 11: Authentication and Authorization</b> <ul style="list-style-type: none"> <li>• Implementing token-based authentication (JWT)</li> <li>• Securing API endpoints</li> <li>• User roles and permissions</li> </ul>	3
14	<b>Module 12: Database Integration with Flask</b> <b>Introduction to Databases</b> <ul style="list-style-type: none"> <li>• Relational vs. non-relational databases</li> <li>• SQL basics and relational database design</li> </ul>	3
15	<b>Module 13: Using SQLAlchemy with Flask</b> <ul style="list-style-type: none"> <li>• Setting up SQLAlchemy</li> <li>• Defining models and migrations</li> <li>• Performing CRUD operations</li> </ul>	3
16	<b>Module 14: Advanced Database Topics</b> <ul style="list-style-type: none"> <li>• Database relationships (one-to-many, many-to-many)</li> <li>• Query optimization</li> <li>• Database transactions</li> </ul>	3

17	<b>Module 15: Introduction to Web Development with Django (part 1)</b>  <b>Introduction to Django</b> <ul style="list-style-type: none"> <li>○ What is Django?</li> <li>○ Setting up a Django project</li> <li>○ Django project structure and apps</li> </ul>	3
18	<b>Module 15: Introduction to Web Development with Django (part 2)</b>  <b>Django Models and ORM</b> <ul style="list-style-type: none"> <li>○ Defining models</li> <li>○ Django ORM basics</li> <li>○ Migrations and schema management</li> </ul>	3
19	<b>Module 15: Introduction to Web Development with Django (part 3)</b>  <b>Django Views and Templates</b> <ul style="list-style-type: none"> <li>○ Function-based vs. class-based views</li> <li>○ Using Django templates</li> <li>○ Template tags and filters</li> </ul>	3
20	<b>Module 16: Django Forms and User Input (part 1)</b>  <ul style="list-style-type: none"> <li>● <b>Django Forms</b> <ul style="list-style-type: none"> <li>● Creating and processing forms</li> <li>● Validating form data</li> <li>● Model forms</li> </ul> </li> </ul>	3
21	<b>Module 16: Django Forms and User Input (part 2)</b>  <ul style="list-style-type: none"> <li>● <b>Advanced Form Handling</b> <ul style="list-style-type: none"> <li>● Handling file uploads</li> <li>● Custom form fields and widgets</li> <li>● Formsets and inline formsets</li> </ul> </li> </ul>	3
22	<b>Module 17: Building RESTful APIs with Django REST Framework</b>  <b>Introduction to Django REST Framework (DRF)</b> <ul style="list-style-type: none"> <li>● Setting up DRF</li> <li>● Serializers and views</li> <li>● Routers and URLs</li> </ul>	3

23	<b>Module 18: Building RESTful APIs with Django REST Framework (part 1)</b> <ul style="list-style-type: none"> <li>● <b>Introduction to Django REST Framework (DRF)</b> <ul style="list-style-type: none"> <li>● Setting up DRF</li> <li>● Serializers and views</li> <li>● Routers and URLs</li> </ul> </li> </ul>	3
24	<b>Module 19: Advanced API Features</b> <ul style="list-style-type: none"> <li>● Authentication and permissions</li> <li>● Pagination and filtering</li> <li>● ViewSets and routers</li> </ul>	3
25	<b>Module 20: Deploying Django APIs</b> <ul style="list-style-type: none"> <li>● Preparing for production</li> <li>● Deploying to cloud services (Heroku, AWS, etc.)</li> <li>● Scaling and performance optimization</li> </ul>	3
26	<b>Module 21: Project Work (part 1)</b> <p><b>Capstone Project</b></p> <ul style="list-style-type: none"> <li>○ Building a comprehensive back-end application</li> <li>○ Incorporating all learned concepts (APIs, authentication, databases, etc.)</li> </ul>	3
27	<b>Module 21: Project Work (part 2)</b> <p><b>Code Review and Feedback</b></p> <ul style="list-style-type: none"> <li>○ Peer review sessions</li> <li>○ Instructor feedback</li> </ul>	3
	<b>Total class hours</b>	81 hours

28	<b>CV Writing:</b> Crafting an effective CV, structuring for impact, tailoring CVs for job roles, common mistakes, and ATS optimization	3
29	<b>Job Interview:</b> Resume-based and behavioral interviews, common interview questions, STAR method, body language, and mock interview practice	4
30	<b>Industrial Life:</b> Workplace culture, professional ethics, career growth, communication skills, handling work pressure, and networking strategies	3
3	<b>Total mentorship class hours</b>	10