Birla Institute of Technology & Science, Pilani

Pilani Campus

Centre for Software Development, SDET Unit

Course Handout: Second Semester 2019-20

Course No:
Course Title: Back-end Development with Python and Django
Instructor-in-Charge: Dushyant Yadav [Email: f20180179@pilani.bits-pilani.ac.in]
Co-instructor: Mukul Gupta [Email: f20180596@pilani.bits-pilani.ac.in]
Website: **http://discovery.bits-pilani.ac.in/CSDCourse/**
Hours: **Wednesday and Friday (6:00 pm - 7:30 pm)**
Room:

1. **Objective and scope of the course:** A practical oriented, comprehensive course that will teach the students various aspects of back-end development using Django (one of the most popular back-end development frameworks **used by Instagram, Pinterest, Coursera etc**). After completion of this course, the student will be able to code dynamic websites of any complexity and design web APIs for back-end of mobile apps.

2. **Course Material :**

   A. Reference Link:
   - https://docs.djangoproject.com/en/3.0/
   - http://learnpython.org

3. Course Plan:

Lecture #	Topic(s)	Reference*
1-2	Python basics.	Lecture slides, class notes
3	What is Back-end - A study of Instagram (written in Django) as a dynamic website.	Class Notes
4	The HTTP protocol - how servers work. Request-Response cycle.	Lecture slides
5-7	Introduction to Django - the MVT Pattern, Admin Panel	Class notes
8-9	Modelling database schema in django Querysets, Relations, Fields	Lecture slides

10	Authentication in Django (login/sign-up functionality)	Class Notes
10-12	Make your website dynamic - Django templating.	Lecture Slides
13	Common in-demand features. Implementing google sign-up in a web app. Automating email/SMS sending to new users using external APIs.	Class notes, shared code
14	Introduction to Back-end development for iOS/Android Apps - REST APIs	Lecture slides
15	Authentication in APIs - token authentication.	Lecture slides, shared code
16-19	Writing your own API.	Class notes, shared code
20	Facebook's GraphQL - What it is and why it's creating so much hype	Class notes
20-22	Some advanced concepts - Database access optimization and caching with Redis - how to make your back-end service work faster. Race conditions - why BITS-ACM's Stock Market Simulation failed last year. Scaling - how Instagram used Django to scale their service to serve thousands of users simultaneously. WebSockets and Django - how DVM updates user wallet balance in fest apps without a 'page refresh' in real-time.	Class notes

4. Evaluation scheme

Component	Duration	Type	Max Marks	Date
Quiz - 1	15 mins.	Closed Book	5	-
Quiz - 2	15 mins.	Closed Book	5	-
Mid-semester	60 mins	Open Book	20	
Assignment	-	-	40	-
End Semester	120 mins.	Open Book	30	

3. Make-up policy: Only in genuine cases, on a case-by-case basis, Make-ups shall be allowed.

4. Chamber Consultation Hours: Media Lab (3231), Friday 7:35 pm - 8:30 pm.

5. Instructor's Profile: The instructor is a self-taught back-end developer in The Department of Visual Media (DVM) and is one of the two people who managed the back-end for the official fest apps of BITS Pilani. His other projects include writing the back-end (in Django) for the content management system for BITS Pilani's official website and writing the back-end (in node.js) for his startup (GoLuggageFree). He is also an active member of BITS-ACM. Know more: https://dush-t.github.io

Instructor-in-Charge: Django

Dushyant Yadav

Birla Institute of Technology & Science,
Pilani Campus, Vidya
Vihar 333031, Rajasthan,
India

T +91 1596
F 2[illegible]
W [illegible]s-pilani.
ac.in