KAZAKH-BRITISH TECHNICAL UNIVERSITY

JSC «Kazakh-British Technical University»
School of IT and Engineering

APPROVED BY
Dean of SITE
Azamat Imanbayev
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«____» _____ **2024**

SYLLABUS

Discipline: Backend Framework
Number of credits: 3
Term: Fall 2023
Instructors full name: Arslan Yersain

Personal Information about the Instructor	Time and place of classes		Contact information	
	Lessons	Office Hours	Tel.	e-mail
Arslan Yersain	Tuesday 11:00-13:00 Saturday 12:00-18:00	-	Telegram @arslanyersain	a.yersain@kbtu.kz

COURSE DURATION: 3 credits, 15 weeks, 45 class hours

COURSE DESCRIPTION

This course is designed to equip learners with a thorough understanding of Django & the powerful and versatile Python web framework. Over 15 comprehensive lectures, students will journey from the foundational aspects of Djangoto its best practices. The course is structured to provide not only theoretical knowledge but also practical skills, culminating in a hands-on project that encapsulates the entire curriculum.

COURSE OBJECTIVES

The main objective of the course is to provide students with a understanding and practical proficiency in Django. By the end of the course, students will be able to

1. Understand Web Development Architecture
2. Build Websites using Django Rest Framework
3. Master Database Management System
4. Develop RESTful APIs
5. Dockerise Application
6. Understand MVC patterns

COURSE OUTCOMES

Knowledge and skill levels obtained during the study of this course must correspond to the knowledge and skill of bachelor given in qualification description.

COURSE POST REQUISITES

Web application using Django and Django REST Framework

LITERATURE

Docs

1. Python Docs https://docs.python.org/3/
2. Django Docs https://docs.djangoproject.com/en/5.0/
3. DRF Docs https://www.django-rest-framework.org/

Books

1. **Fluent Python**
2. **Designing Data-Intensive Application**
3. **Django https://djangobook.com/**

COURSE ASSESSMENT CRITERIA

Assessment occurs continuously throughout the course. The evaluation will be based on the levels of (maximums in %):

Type of activity	Final scores
Attendance /participation	**10%**
Git	**30%**
Midterm Project	**25%**
Final exam* Project defense	**35%**
Total	**100%**

COURSE CALENDAR

Week	CLASS WORK		Practice	Homework
	Topic	Lec-tures		
1	2	3	4	5
1	**Lecture #1.** Introduction to Web Development 1. Overview of Web 2. Web architecture (Server – Client) 3. Web protocols 4. HTTP status codes 5. System design basics 6. Comparing Python Frameworks	1	Practice #1	Howeworkd #1

2	**Lecture #2.** Introduction to Django 1. Overview of Django 2. Django's architecture and design philosophy 3. Setting up a development environment 4. URL configuration and patterns 5. Writing views to process data and return responses 6. Mapping URLs to views 7. Create a simple Django Project	2	Practice #2	Homework #2
3	**Lecture #3.** Django Templates 1. Template system in Django 2. Filters 3. Jinja 4. Using templates to generate dynamic html content	3	Practice #3	Homework #3
4	**Lecture #4.** Django Forms and User Input 1. Working with Django Forms 2. Validating and processing user input 3. Customizing form appearance and behavior 4. Implementing CRUD Operations 5. Integration forms with CRUD functional 6. Connecting Templates with Forms	4	Practice #4	Homework #4
5	**Lecture #5 Django Models and Databases** 1. Understanding models in Django 2. Database setup and migrations 3. Defining models and understanding ORM 4. Admin interface basics	5	Practice #5	Homework #5
6	**Lecture #6.** Advanced Models and Relationship 1. Advanced models features 2. Relationships 3. Using models managers 4. MTV 5. Class-Based Views	6	Practice #6	Homework #6
7	**Lecture #7.** User Authentication and Authorization 1. User authentication system in Django 2. Managing users and permissions 3. Creating superusers & users	7	Practice #7	
8	**MIDTERM**	8		

9	**Lecture #8.** Django REST Framework 1. Introduction to RESTful APIs with Django 2. Serializers 3. ViewSetts	9	Practice #9	Homework #9
10	**Lecture #9. Django Rest Framework Advanced** 1. DRF best-practices 2. Integration with third – party apps 3. Custom serializer and view logic	10	Practice #10	Homework #10
11	**Lecture #10. Docker Basics** 1. Introduction to Docker 2. Understanding containerization and its advantages 3. Overview of Docker	11	Practice #11	Homework #11
12	**Lecture #11-#12** Advanced Django & DRF 1. Documentation 2. Authentication methods 3. Analyzing real-world use cases of Django with DRF 4. Discussing deployment strategies Applying best practices and advanced features	12	Practice #12	Homework #12
13	**Lecture #11-#12** Advanced Django & DRF 1. Documentation 2. Authentication methods 3. Analyzing real-world use cases of Django with DRF 4. Discussing deployment strategies Applying best practices and advanced features	13	Practice #13	Homework #13
14	**Open Questions**	14		
15	**ENDTERM**	15		
16-17	**Final Project**		**COURSE PROJECT DEFENCE**	

ATTENTION!

1) If student missed without plausible reason more than **30% of lessons student receives «F (Fail)»** grade;

2) If for two attestations student receives 29 or less points, this student is not accepted to final exam and for all course he (she) receives **«F (Fail)» grade;**

3) If student receives on final exam 19 or less points, then independently on how many points he (she) received for two attestations, in whole he (she) receives **«F (Fail)» grade;**

In the case of missing or being late for final exam without plausible reason, independently on how many points he (she) received for two attestations, in whole he (she) receives **«F (Fail)» grade.**

4) It is forbidden to change the topic of the course project and change the composition of the team after 2 weeks of training.

5) If a student obtains **30 points** in theoretical knowledge, but does not have a **finished course project (15 week)**, he is not allowed to defend the project and receives an **«F (Fail)» grade** for the course automatically.

6) If a student missed more **than 50%** of the lectures due to health problems and has medical documents in the form of KBTU, but did not complete the course project, the student is not allowed to **defend the course project**, and it is recommended to take an **academic leave.**

7) In case of non-compliance of the course project with the **given assignment**, the student is not allowed to **defend the course** project and automatically receives an **«F (Fail)» grade**.

8) In case of detection **of plagiarism** in the course project, the student is automatically not allowed to defend the course project and receives **«F (Fail)» grade**.

Academic Policy:

- Cheating, duplication, falsification of data, plagiarism are not permitted under any circumstances!
- Students must participate fully in every class. While attendance is crucial, merely being in class does not constitute "participation". Participation means reading the assigned materials, coming to class prepared to ask questions and engage in discussion.
- Students are expected to take an active role in learning (the instructor will provide the information and guidelines to do this).
- Students must come to class on time.
- Students are to take responsibility for making up any work missed.
- Make up tests in case of absence will not normally be allowed.
- Mobile phones must always be switched off in class.
- Students should always show tolerance, consideration and mutual support towards other students.

Students are encouraged to

- consult the teacher on any issues related to the course;
- make up within a week's time for the works undone for a valid reason without any grade deductions;
- make any proposals on improvement of the academic process;
- track down their continuous rating throughout the semester.