Course Syllabus

Code - Course Title	**BVA110 - Internet of Things**
Course Type	II. SEMESTER
Laboratory + Practice	2+1
ECTS	**3.0**
Language of Instruction	Türkçe
Course Type	Area Elective Courses
Course Instructor(s)	ÖĞR. GÖR. AHMET MÜCAHİD ARVASİ

Mode of Delivery	Face to face
Prerequisites	There are no prerequisites or corequisites for this course.

Course Syllabus

Weeks	Learning Outcomes	Topics	Teaching Methods
Week - 1		Introduction to IoT: Definition, History, Basic Concepts, and Layered Architecture	
Week - 2		IoT Hardware Components: Sensors, Actuators, and Edge Devices	
Week - 3		Local Communication Protocols: Wi-Fi, Bluetooth, BLE, and Zigbee Architecture	
Week - 4		Wide Area and Cellular Communication: LPWAN (LoRaWAN, NB-IoT) and the Role of 5G in IoT	
Week - 5		IoT Messaging and Data Transmission Protocols: Comparison of MQTT, CoAP, and HTTP	
Week - 6		Data Collection, Gateways, and Preprocessing in Edge Computing	
Week - 7		IoT Cloud Integration: Architectures for Data Storage, Management, and Processing in the Cloud	
Week - 8		Midterm Exam	
Week - 9		IoT Security 1: Threat Models, Device Authentication, and Network Security	
Week - 10		IoT Security 2: Encryption, Secure Connections, and Secure Over-The-Air (OTA) Updates	
Week - 11		IoT Data Analytics: Real-Time Monitoring and Visualization of Sensor Data	
Week - 12		Sectoral Applications 1: Smart Home Systems and Industrial IoT (IIoT)	
Week - 13		Sectoral Applications 2: IoT Applications in Smart City Management, Transportation, Agriculture, and Health	
Week - 14		Ethics, Law, and Future: Data Privacy, Legal Regulations, and Student Project Presentations	

Learning Outcomes

#	Learning Outcome
1	- Students can comprehend the end-to-end architecture, layers, and basic hardware components (sensors, gateways) of the Internet of Things (IoT) ecosystem. - They can select the most appropriate local and wide-area communication protocols (Wi-Fi, Zigbee, LoRa) for IoT projects and implement messaging standards like MQTT/HTTP for data transmission. - They can develop an integrated system by designing data collection, preprocessing, storage, and visualization processes spanning from edge devices to the cloud. - They can identify security vulnerabilities in IoT systems and produce reliable solutions for smart cities, health, or industry (IIoT) areas, taking into account data privacy and legal/ethical rules.

Sustainable Development Goals

No content has been provided.

Course Theme

No content has been provided.

AKTS Workload

Activity	Duration (Hour)	Count	Workload
Teorik Derse Katılım	0	0	0
Sınıf Dışı Çalışma (Ön Hazırlık & Pekiştirme Amaçlı)	0	0	0
Ödevler	0	0	0
Proje - Rapor - Sunum Hazırlama	0	0	0
Ara Sınav Hazırlığı (sınav süresi dahil)	0	0	0
Final Sınavı Hazırlığı (sınav süresi dahil)	0	0	0
Uygulama (Laboratuvar, Müzik/Enstrüman Uygulaması, Atölye/Saha Çalışması vb.)	0	0	0
Staj Uygulaması	0	0	0
		Calculated ECTS	**0**

Assessment Method and Passing Requirements

No content has been provided.