Course Syllabus

Code - Course Title	**AYG107 - Cloud Computing Architectures**
Course Type	IV. 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		Cloud Computing Fundamentals: Service Models (IaaS, PaaS, SaaS) and Deployment Types (Public, Private, Hybrid Cloud)	
Week - 2		Virtualization Technologies: Virtual Machines (VM), Hypervisors, Resource Allocation, and Isolation	
Week - 3		Introduction to Container Architectures: Container Structures (Docker), Comparison with Virtual Machines, and Isolation Logic	
Week - 4		Image Management: Dockerfile Preparation, Container Registry Management, and Microservices Integration	
Week - 5		Orchestration Systems 1: Kubernetes Fundamentals, Cluster Management Components, and Pod Architecture	
Week - 6		Orchestration Systems 2: Service Discovery, Auto-Scaling, and Load Balancing	
Week - 7		Serverless Computing: Function-as-a-Service (FaaS), Event-Driven Architectures, and Back-End Connections	
Week - 8		Midterm Exam	
Week - 9		Cloud Databases: Managed Services (RDS, DynamoDB, etc.), Data Storage Solutions, and Automated Backup	
Week - 10		Continuous Integration and Continuous Deployment (CI/CD): Creating Deployment Pipelines and Release Management	
Week - 11		Infrastructure as Code (IaC): Provisioning and Managing Cloud Resources with Code (Terraform, CloudFormation)	
Week - 12		Cloud Security 1: Identity and Access Management (IAM), User Authorization, and Role-Based Controls	
Week - 13		Cloud Security 2 and FinOps: Network Security (VPC, Firewall), Advanced Threat Protection, and Cost Optimization	
Week - 14		Modern Cloud Architectures Applications: End-to-End Deployment on Real-World Scenarios and Project Presentations	

Learning Outcomes

#	Learning Outcome
1	Upon successful completion of this course, students will gain the competence to perform resource allocation and isolation operations by understanding cloud computing service models and the working principles of virtualization technologies; provide container structures, image management, and microservices orchestration (auto-scaling, load balancing) using modern tools like Docker and Kubernetes; integrate event-driven serverless computing architectures with managed cloud databases; establish CI/CD continuous deployment pipelines with Infrastructure as Code (IaC) approaches; and project reliable, scalable, and high-performance cloud-native systems by observing network security, access management (IAM), and cost optimization principles.

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.