Course Syllabus

Code - Course Title	**VBA406 - Optimization Methods for Data Science**
Course Type	VIII. SEMESTER
Laboratory + Practice	3+0
ECTS	**5.0**
Language of Instruction	İngilizce
Course Type	Required Courses
Course Instructor(s)	DR. ÖĞR. ÜYESİ ÖNDER DORAK

Mode of Delivery	Face to face

Course Syllabus

Weeks	Learning Outcomes	Topics	Teaching Methods
Week - 1		Mathematical Programming: Formulating linear programming	
Week - 2		Integer programming applications	
Week - 3		Defining mathematical constraints and objective functions	
Week - 4		Heuristic Optimization: Designing genetic algorithms	
Week - 5		Implementing simulated annealing	
Week - 6		Programming particle swarm optimization	
Week - 7		Multi-criteria decision making (MCDM): Objective weighting	
Week - 8		Leveraging open public datasets	
Week - 9		Constructing and solving decision matrices	
Week - 10		Applied Optimization: Solving logistics problems	
Week - 11		Solving complex routing problems	
Week - 12		Portfolio optimization in finance	
Week - 13		Resource allocation in institutional planning	
Week - 14		Final optimization projects review	

Learning Outcomes

#	Learning Outcome
1	Formulate linear programming problems and mathematical constraints
2	Design and program heuristic genetic and swarm algorithms

Learning Outcomes

#	Learning Outcome
3	Construct objective multi-criteria decision matrices
4	Solve applied logistics, routing, and portfolio optimizations

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.