Course Syllabus

Code - Course Title	**BVA105 - Data Structures and Algorithms**
Course Type	I. SEMESTER
Laboratory + Practice	2+2
ECTS	**5.0**
Language of Instruction	Türkçe
Course Type	Required Courses
Course Instructor(s)	ÖĞR. GÖR. DR. NEŞE AGUN

Mode of Delivery	Face to Face
Prerequisites	There are no prerequisites.
Courses Recomended	Python Programming MOOC 2025 - https://programming-25.mooc.fiPython Tutorial - https://docs.python.org/3/tutorial/index.htmlPython - Erdinç Uzun - https://erdincuzun.com/python/Algoritmalar - Robert Sedgewick,Kevin Wayne - Nobel YayıncılıkAlgorithms - Robert Sedgewick,Kevin WayneAlgorithms - https://algs4.cs.princeton.edu/home/Python Algorithms - https://github.com/TheAlgorithms/Pythonhttps://visualgo.net/enhttps://exercism.org
Recommended Resources	Algoritmalar - Robert Sedgewick,Kevin Wayne - Nobel YayıncılıkAlgorithms - Robert Sedgewick,Kevin Wayne
Work Placement	It is not available.

Course Syllabus

Weeks	Learning Outcomes	Topics	Teaching Methods
Week - 1		Introduction to Python, Usage of Github, Python Development Environments	
Week - 2		Variables, Arithmetic Operators, Basic IO Operations	
Week - 3		Flowcharts, Pseudocode, Control Structures	
Week - 4		Complex Control Structures, Logical Operators	
Week - 5		Loops, Nested Loops, Debugging	
Week - 6		Lists, Concepts of Data Structures and Algorithms, Introduction to Basic Algorithms (Linear Search, Finding min-max in lists, statistical algorithms)	
Week - 7		Functions, Recursive Functions, Object Oriented Programming Concepts	
Week - 8		Stacks and Queues	
Week - 9		Linked Lists	
Week - 10		Trees, Binary Search Trees	
Week - 11		Heaps	
Week - 12		Search and Sorting Algorithms, Analysis of Algorithms	

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Weeks	Learning Outcomes	Topics	Teaching Methods
Week - 13		Hash Tables	
Week - 14		Graphs, Types of Graphs, Graph Data Structures, Graph Algorithms (BFS, DFS, MST, Shortest Path)	

Learning Outcomes

#	Learning Outcome
1	Algorithmic thinking and problem-solving skills
2	Analysis of algorithms
3	Implementation of data structures and algorithms
4	Development of programming skills
5	Writes error-free functional code using the fundamental building blocks of Python (variables, loops, functions).

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.