Manisa Celal Bayar Üniversitesi

MANİSA VOCATIONAL SCHOOL OF TECHNICAL SCIENCES

BIG DATA ANALYST

Büyük Veri Analistliği (N.Ö)(A.D.)

1.Semester Course Plan

Course Code	Course Name	T+A+L	Compulsory/Elective	ECTS
BVA 1101	Basic of Programming	3+0+0	Compulsory	5
BVA 1103	Data Science	3+2+0	Compulsory	5
BVA 1105	Statistics and Probability	3+0+0	Compulsory	5
BVA 1107	Data Structures and Algorithms	2+2+0	Compulsory	5
BVA 1109	Occupational Health and Safety	2+0+0	Compulsory	3
BVA 1111	Mathematics	3+0+0	Compulsory	5
BVA 1001	Seçmeli Dersler	-	Elective	2
			Total ECTS	30
	Course Groups			
BVA 1201	Entrepreneurship	2+0+0	Elective	2
BVA 1203	Generative AI	2+0+0	Elective	2

2.Semester Course Plan

Course Code	Course Name	T+A+L	Compulsory/Elective	ECTS
BVA 1102	Data Mining	2+2+0	Compulsory	5
BVA 1104	Fundamentals of Machine Learning	2+1+0	Compulsory	4
BVA 1106	Database Technologies	3+1+0	Compulsory	5
BVA 1108	Information Technologies	2+1+0	Compulsory	3
BVA 1110	Big Data Technologies	2+2+0	Compulsory	5
BVA 1112	Advanced Data Analytics	2+3+0	Compulsory	4
BVA 1114	Social Responsibility	1+0+0	Compulsory	1
BVA 1002	Nontechnical Elective Course	-	Elective	3
			Total ECTS	30
	Course Groups			
BVA 1202	Basic Level Professional Foreign Language	2+0+0	Elective	3
BVA 1204	Professional Ethics	2+0+0	Elective	3
BVA 1206	IT Ethics	2+0+0	Elective	3
BVA 1208	Professional Mathematics	2+0+0	Elective	3
BVA 1210	Sectoral Applications in Information Technologies	2+0+0	Elective	3
BVA 1212	Linear Algebra and Applications	2+0+0	Elective	3
BVA 1214	Media Literacy	2+0+0	Elective	3
BVA 1216	Quality Assurance and Standards	2+0+0	Elective	3
BVA 1218	Technology Management	2+0+0	Elective	3
BVA 1220	Innovation Management	2+0+0	Elective	3
BVA 1222	Sustainable Development and Information Technologies	2+0+0	Elective	3
BVA 1224	Research Methods and Techniques	2+0+0	Elective	3
BVA 1226	Environmental Protection	2+0+0	Elective	3
BVA 1228	First Aid	2+0+0	Elective	3
BVA 1230	Business Management	2+0+0	Elective	3

3.Semester Course Plan

Course Code	Course Name	T+A+L	Compulsory/Elective	ECTS
BVA 2101	Applied Data Analysis	2+2+0	Compulsory	5
BVA 2103	Cloud Computing for Big Data	3+0+0	Compulsory	4
BVA 2105	Social Network Analysis	2+0+0	Compulsory	3
BVA 2107	Data Visualization	2+1+0	Compulsory	5
BVA 2109	R&D in Big Data Analytics	2+2+0	Compulsory	5
BVA 1003	Technical Elective Courses	-	Elective	5
BVA 1005	Elective Courses-2	-	Elective	3
			Total ECTS	30
	Course Groups			
BVA 2201	Operating Systems	2+2+0	Elective	5
BVA 2203	Software Architectures	2+2+0	Elective	5
BVA 2205	Cybersecurity and Information Law	2+2+0	Elective	5
BVA 2207	Open Source Software	2+2+0	Elective	5
BVA 2209	Mobile Programming	2+2+0	Elective	5
BVA 2211	Development of Learning Analytics Software	2+2+0	Elective	
BVA 2213	Mathematical Applications in Information Technologies	2+2+0	Elective	
BVA 2215	Artificial Intelligence Tool Development	2+2+0	Elective	

BVA 2217	Object-Oriented Programming	2+2+0	Elective	5
BVA 2219	Software Installation and Management	2+2+0	Elective	5
BVA 2221	Systems Analysis and Design	2+2+0	Elective	5
BVA 2223	Requirements and Systems Analysis	2+2+0	Elective	5
BVA 2225	Virtualization and Cloud Computing	2+2+0	Elective	5
BVA 2227	Discrete Mathematics for Computer Science	2+2+0	Elective	5
BVA 2229	Computer Networks and Communication	2+2+0	Elective	5
BVA 2231	Data Science with R	2+2+0	Elective	5
BVA 2233	Project Development in Big Data Analytics	2+2+0	Elective	5
BVA 2235	Advanced Professional Foreign Language	2+0+0	Elective	3
BVA 2237	Communication and Ethics	2+0+0	Elective	3
BVA 2239	Artificial Intelligence Technologies	2+0+0	Elective	3
BVA 2241	Computer Hardware	2+0+0	Elective	3
BVA 2243	Art and Aesthetics	2+0+0	Elective	3
BVA 2245	User Interface Design	2+0+0	Elective	3
BVA 2247	Financial Literacy	2+0+0	Elective	3
BVA 2249	Fundamentals of Web Design	2+0+0	Elective	3
BVA 2251	Mind Games	2+0+0	Elective	3
BVA 2253	Data Security	2+0+0	Elective	3
BVA 2255	Current Technological Developments	1+0+0	Elective	3
BVA 2257	Content and Learning Management Systems	2+0+0	Elective	3

	4.Semester Course Plan			
Course Code	Course Name	T+A+L	Compulsory/Elective	ECTS
AİT 2102	Principles of Atatürk and History of Reforms	4+0+0	Compulsory	4
MYO 2002	Professional Training in Business	5+0+0	Compulsory	18
TDL 2102	Turkish Language	4+0+0	Compulsory	4
YDI 2102	Foreign Language	4+0+0	Compulsory	4
			Total ECTS	30

MANISA CELAL BAYAR UNIVERSITY
MANISA VOCATIONAL SCHOOL OF TECHNICAL SCIENCE
COMPUTER TECHNOLOGY DEPARTMENT
BIG DATA ANALYTICS
THE COURSE DESCRIPTION FORM

Course Name	Programming Fundamentals		
Course Code	BVA 1101	Activity Type	Compulsory
Semester	Fall	Semester	1
Course Language	Turkish	National Credit	3
Hours Per Week	3	ECTS	5
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

General concepts related to computer programming, system analysis, the concept of algorithms, flowcharts, how algorithms and flowcharts are created, programming language features, input-output operations, the concept of variables and their types, operators, decision structures and loop structures, arrays, functions, subprogram concepts, error handling, software testing, and file operations will be taught with practical applications

The Aim of Course

Teaching the fundamental concepts of programming, acquiring the skill to develop algorithms and flowcharts, solving a problem by developing a program in a computer environment, understanding and fixing potential errors in an existing program, and storing data using file operations

Learning Outcomes

1) Knows the basic concepts of programming
2) Knows the types of algorithms and can create algorithms
3) Knows flowcharts and can create a program using flowcharts
4) Knows data types and operators
5) Knows input/output commands and can use them
6) Can perform error tracking and write error handling code
7) Can perform file operations

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes

Course Content

Week	Topic	Content
Week 1	Theoretical	Basic Concepts Related to Programming
	Practical	

		Laboratory	
Week 2	Theoretical	Algorithms, Types of Algorithms, Creating Algorithms	
	Practical		
	Laboratory		
Week 3	Theoretical	Flowcharts, Used Symbols, Creating a Flowchart	
	Practical		
	Laboratory		
Week 4	Theoretical	Data Types, Types of Operators, Input-Output Operations	
	Practical		
	Laboratory		
Week 5	Theoretical	Decision and Control Structures	
	Practical		
	Laboratory		
Week 6	Theoretical	Loop Structures	
	Practical		
	Laboratory		
Week 7	Theoretical	Problem Solving Using Decision and Loop Structures	
	Practical		
	Laboratory		
Week 8	Theoretical	Midterm Exam	
	Practical		
	Laboratory		
Week 9	Theoretical	Definition of Arrays and One-Dimensional Array Declarations	
	Practical		
	Laboratory		
Week 10	Theoretical	Multidimensional Arrays and Use of Matrices	
	Practical		
	Laboratory		
Week 11	Theoretical	Problem Solving Using Arrays	
	Practical		
	Laboratory		
Week 12	Theoretical	Text (String), Character String Operations	
	Practical		
	Laboratory		
Week 13	Theoretical	Function Definition and Call, and Use of Subprograms	
	Practical		
	Laboratory		
Week 14	Theoretical	Sorting and Searching Algorithms, and Use of Recursive Functions	
	Practical		
	Laboratory		
Week 15	Theoretical	File Operations	
	Practical		
	Laboratory		

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	-	-	-	5	3	-	-	-	-	-	5	-	-	-	-
ÖÇ2	-	-	-	5	3	-	-	-	-	-	5	-	-	-	-
ÖÇ3	-	-	-	5	3	-	-	-	-	-	5	-	-	-	-
ÖÇ4	-	-	-	5	3	-	-	-	-	-	5	-	-	-	-
ÖÇ5	-	-	-	5	3	-	-	-	-	-	5	-	-	-	-
ÖÇ6	-	-	-	5	3	-	-	-	-	-	5	-	-	-	-
ÖÇ7	-	-	-	5	3	-	-	-	-	-	5	-	-	-	-

Course Name	Data Science		
Course Code	BVA 1103	Activity Type	Compulsory
Semester	Fall	Semester	1
Course Language	Turkish	National Credit	5
Hours Per Week	5	ECTS	5
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

The definition and characteristics of data, the sources and types of data, the challenges and opportunities in data analysis, use cases, and real-world examples

The Aim of Course

Teaching the fundamental concepts of data science, mastering the stages of data science, being able to perform data analysis, and teaching data visualization techniques

Learning Outcomes

1) Understanding the science of data
2) Understanding the sources and types of data
3) Mastery of tools and technologies in the field of data science
4) Learning data collection and preprocessing techniques
5) Having general knowledge of data analysis techniques

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes

Course Content		
Week	Topic	Content
Week 1	Theoretical	Introduction to Data Analysis
	Practical	
	Laboratory	
Week 2	Theoretical	Data Science and Basic Concepts
	Practical	
	Laboratory	
Week 3	Theoretical	Data Types and Data Resources
	Practical	
	Laboratory	
Week 4	Theoretical	Data Science Process and Its Stages
	Practical	Data Science Process and Its Stages
	Laboratory	
Week 5	Theoretical	Data Collection and Preprocessing

	Practical	
	Laboratory	
Week 6	Theoretical	Data Cleaning and Organization
	Practical	Data Cleaning and Organization
	Laboratory	
Week 7	Theoretical	Datasets
	Practical	Datasets
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Statistical Data Analysis
	Practical	Statistical Data Analysis
	Laboratory	
Week 10	Theoretical	Data Visualization Tools and Techniques
	Practical	Data Visualization Tools and Techniques
	Laboratory	
Week 11	Theoretical	Types of Charts and Their Areas of Use
	Practical	Types of Charts and Their Areas of Use
	Laboratory	
Week 12	Theoretical	Fundamentals of Machine Learning
	Practical	
	Laboratory	
Week 13	Theoretical	Deep Learning and Artificial Neural Networks
	Practical	Deep Learning and Artificial Neural Networks
	Laboratory	
Week 14	Theoretical	Big Data and Parallel Processing
	Practical	Big Data and Parallel Processing
	Laboratory	
Week 15	Theoretical	Data Science Projects
	Practical	
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	3	-	3	-	-	-	3	-	-	-	-	4	3	-	-
ÖÇ2	3	-	3	-	-	-	3	-	-	-	-	4	3	-	-
ÖÇ3	3	-	3	-	-	-	3	-	-	-	-	4	3	-	-
ÖÇ4	3	-	3	-	-	-	3	-	-	-	-	4	3	-	-
ÖÇ5	3	-	3	-	-	-	3	-	-	-	-	4	3	-	-

Course Name	Statistics and Probability		
Course Code	BVA 1105	Activity Type	Compulsory
Semester	Fall	Semester	1
Course Language	Turkish	National Credit	3
Hours Per Week	3	ECTS	5
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

Data collection, sample spaces and events, basic probability theory

The Aim of Course

Mastering basic statistical concepts. Having knowledge about variables and distributions.

Learning Outcomes

1) Ability to solve basic probability problems
2) Ability to construct confidence intervals
3) Evaluation of statistical data using variance analysis
4) Ability to create and analyze regression equations

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes

Course Content		
Week	Topic	Content
Week 1	Theoretical	Basic Statistical Concepts and Frequency Distributions
	Practical	
	Laboratory	
Week 2	Theoretical	Measures of Central Tendency
	Practical	
	Laboratory	
Week 3	Theoretical	Measures of Dispersion and Graphs
	Practical	
	Laboratory	
Week 4	Theoretical	Set, Permutation, and Combination Concepts
	Practical	
	Laboratory	
Week 5	Theoretical	Probability and Conditional Probability
	Practical	

	Laboratory	
Week 6	Theoretical	Discrete Random Variables and Their Distributions
	Practical	
	Laboratory	
Week 7	Theoretical	Continuous Random Variables and Their Distributions
	Practical	
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Normal Distribution
	Practical	
	Laboratory	
Week 10	Theoretical	Sampling Distribution and Estimation
	Practical	
	Laboratory	
Week 11	Theoretical	Interval Estimation
	Practical	
	Laboratory	
Week 12	Theoretical	Hypothesis Testing 1
	Practical	
	Laboratory	
Week 13	Theoretical	Hypothesis Testing 2
	Practical	
	Laboratory	
Week 14	Theoretical	Sample Size
	Practical	
	Laboratory	
Week 15	Theoretical	Correlation Coefficients
	Practical	
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	-	-	-	5	-	-	-	-	-	-	-	4	4	-	-
ÖÇ2	-	-	-	5	-	-	-	-	-	-	-	4	4	-	-
ÖÇ3	-	-	-	5	-	-	-	-	-	-	-	4	4	-	-
ÖÇ4	-	-	-	5	-	-	-	-	-	-	-	4	4	-	-

Course Name	Data Structures and Algorithms		
Course Code	BVA 1107	Activity Type	Compulsory
Semester	Fall	Semester	1
Course Language	Turkish	National Credit	4
Hours Per Week	4	ECTS	5
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

Basic algorithms, analysis of algorithms, advanced data structures, advanced algorithms

The Aim of Course

Acquiring algorithmic thinking skills. Being able to perform algorithm analysis on different data.

Learning Outcomes

1) Algorithmic thinking and problem-solving skills
2) Analysis of algorithms
3) Implementation of data structures and algorithms
4) Development of programming skill

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes

Course Content		
Week	Topic	Content
Week 1	Theoretical	Introduction to Data Structures and Basic Concepts
	Practical	
	Laboratory	
Week 2	Theoretical	Arrays and Dynamic Memory Management
	Practical	
	Laboratory	
Week 3	Theoretical	Linked Lists and Their Types (Singly Linked, Doubly Linked, Circular)
	Practical	
	Laboratory	
Week 4	Theoretical	Stacks and Basic Operations (Push, Pop)
	Practical	Stacks and Basic Operations (Push, Pop)
	Laboratory	
Week 5	Theoretical	Queues and Basic Operations (Enqueue, Dequeue)
	Practical	Queues and Basic Operations (Enqueue, Dequeue)

	Laboratory	
Week 6	Theoretical	Introduction to Tree Structures and Basic Terminology
	Practical	
	Laboratory	
Week 7	Theoretical	Binary Trees and Basic Operations (Insertion, Deletion, Searching)
	Practical	Binary Trees and Basic Operations (Insertion, Deletion, Searching)
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Sets and Linked Structures
	Practical	Sets and Linked Structures
	Laboratory	
Week 10	Theoretical	Introduction to Graph Structures and Basic Concepts
	Practical	
	Laboratory	
Week 11	Theoretical	Types of Graphs and Their Areas of Use
	Practical	
	Laboratory	
Week 12	Theoretical	Types of Graphs (Directed, Undirected, Weighted) and Basic Operations
	Practical	Types of Graphs (Directed, Undirected, Weighted) and Basic Operations
	Laboratory	
Week 13	Theoretical	Basic Sorting Algorithms (Bubble, Selection, Insertion)
	Practical	
	Laboratory	
Week 14	Theoretical	Hash Tables and Basic Operations (Insertion, Deletion, Searching)
	Practical	Hash Tables and Basic Operations (Insertion, Deletion, Searching)
	Laboratory	
Week 15	Theoretical	Algortihm analysis
	Practical	Algortihm analysis
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	3	-	-	3	4	-	-	-	-	-	5	-	-	-	-
ÖÇ2	3	-	-	3	4	-	-	-	-	-	5	-	-	-	-
ÖÇ3	3	-	-	3	4	-	-	-	-	-	5	-	-	-	-
ÖÇ4	3	-	-	3	4	-	-	-	-	-	5	-	-	-	-

Course Name	Occupational Health and Safety		
Course Code	BVA 1109	Activity Type	Compulsory
Semester	Fall	Semester	1
Course Language	Turkish	National Credit	2
Hours Per Week	2	ECTS	3
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

The concept of job security and the basic principles, measures related to electricity use, machinery and related measures, first aid, personal protectors, safety at work legislation

The Aim of Course

The aim of this course is to equip the student with the necessary competencies to ensure occupational safety.

Learning Outcomes

1) To be able to take first aid measures
2. To be able to provide working safety
3. To be able to take precautions in accordance with work safety legislation
4. To be able to have knowledge about occupational accidents and occupational diseases

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes

Course Content		
Week	Topic	Content
Week 1	Theoretical	First Aid Training
	Practical	
	Laboratory	
Week 2	Theoretical	First Aid Training
	Practical	
	Laboratory	
Week 3	Theoretical	First Aid Supplies
	Practical	
	Laboratory	
Week 4	Theoretical	First Aid Supplies
	Practical	
	Laboratory	
Week 5	Theoretical	Provide Personal Safety
	Practical	

	Laboratory	
Week 6	Theoretical	Provide Personal Safety
	Practical	
	Laboratory	
Week 7	Theoretical	Provide Personal Safety
	Practical	
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Ensuring Employee Safety
	Practical	
	Laboratory	
Week 10	Theoretical	Ensuring Workplace Safety
	Practical	
	Laboratory	
Week 11	Theoretical	Ensuring Workplace Safety
	Practical	
	Laboratory	
Week 12	Theoretical	Occupational Safety Regulations
	Practical	
	Laboratory	
Week 13	Theoretical	Occupational Safety Regulations
	Practical	
	Laboratory	
Week 14	Theoretical	Occupational Safety Regulations
	Practical	
	Laboratory	
Week 15	Theoretical	General Review
	Practical	
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-
ÖÇ2	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-
ÖÇ3	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-
ÖÇ4	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-

Course Name	Mathematics		
Course Code	BVA 1111	Activity Type	Compulsory
Semester	Fall	Semester	1
Course Language	Turkish	National Credit	3
Hours Per Week	3	ECTS	5
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

Algebra, Geometry, Trigonometry, Calculus, Probability and Statistics

The Aim of Course

To effectively teach the topics within the course to the student and establish a necessary and sufficient mathematical foundation.

Learning Outcomes

1) Advanced mathematical skills
2) Problem-solving abilities
3) Critical thinking
4) Application of mathematical concepts
5) Graphical representation

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes

Course Content		
Week	Topic	Content
Week 1	Theoretical	Solving Equations and Inequalities
	Practical	
	Laboratory	
Week 2	Theoretical	Functions and Their Graphs, Parabola, Linear, and Exponential Functions
	Practical	
	Laboratory	
Week 3	Theoretical	Properties of Triangles and Trigonometry
	Practical	
	Laboratory	
Week 4	Theoretical	Properties of Circles
	Practical	
	Laboratory	
Week 5	Theoretical	Three-Dimensional Shapes and Volume Calculations

	Practical	
	Laboratory	
Week 6	Theoretical	Trigonometric Functions and Trigonometric Equations
	Practical	
	Laboratory	
Week 7	Theoretical	Solving Triangles and Trigonometric Applications
	Practical	
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Limits and Continuity
	Practical	
	Laboratory	
Week 10	Theoretical	Derivative
	Practical	
	Laboratory	
Week 11	Theoretical	Integral
	Practical	
	Laboratory	
Week 12	Theoretical	Applications of Derivative and Integral
	Practical	
	Laboratory	
Week 13	Theoretical	Probability Concepts and Probability Distributions
	Practical	
	Laboratory	
Week 14	Theoretical	Basic Statistical Calculations and Data Analysis
	Practical	
	Laboratory	
Week 15	Theoretical	Real-World Applications and Problems
	Practical	
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	-	-	-	-	4	-	4	-	-	-	-	-	-	-	-
ÖÇ2	-	-	-	-	4	-	4	-	-	-	-	-	-	-	-
ÖÇ3	-	-	-	-	4	-	4	-	-	-	-	-	-	-	-
ÖÇ4	-	-	-	-	4	-	4	-	-	-	-	-	-	-	-
ÖÇ5	-	-	-	-	4	-	4	-	-	-	-	-	-	-	-

Course Name	Entrepreneurship		
Course Code	BVA 1201	Activity Type	Optional
Semester	Fall	Semester	1
Course Language	Turkish	National Credit	2
Hours Per Week	2	ECTS	3
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

Testing of entrepreneurial characteristics, business idea development and creativity exercises, business plan concept and items (market research, marketing plan, production plan, production plan, management plan, financial plan), Workshop studies to consolidate business plan items, Writing and presentation of the business plan

The Aim of Course

This course enables to gain the key factors for the students who will be engaged to work in private sector, and also entrepreneurial cultures to those who have the potential to work. It is aimed that the students who have the potential of entrepreneurship are able to use and develop these features. Examination of the examples and creation of new ideas, legal, financial, economical evaluation of entrepreneurship will increase the motivation of the students

Learning Outcomes

1) Being able to question one's own entrepreneurial traits based on general entrepreneurial characteristics
2) Being able to compare the activities described in relation to different types of entrepreneurship
3) Being able to develop one's own entrepreneurial traits by evaluating the entrepreneurial characteristics found in successful entrepreneurship stories

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes, Yavuz Odabaşı (editör), Girişimcilik, Anadolu Üniversitesi Yayını no: 1567, 2004, Tamer Müftüoğlu ve Tülin Durukan, Girişimcilik ve KOBİ'ler, Gazi Kitapevi, 2004, R. Hisrich, Michael Peters ve Dean Shepherd, Girişimcilik

Course Content		
Week	Topic	Content
Week 1	Theoretical	Basic concepts of entrepreneur and entrepreneurship, factors affecting entrepreneurship, entrepreneurship
	Practical	
	Laboratory	
Week 2	Theoretical	Testing entrepreneurial traits, business idea development, and creativity exercises

		Practical	
		Laboratory	
Week 3		Theoretical	Concept of responsible entrepreneurship and experience sharing
		Practical	
		Laboratory	
Week 4		Theoretical	Concept of business and business functions
		Practical	
		Laboratory	
Week 5		Theoretical	Types of businesses and forms of establishment
		Practical	
		Laboratory	
Week 6		Theoretical	Financial and legal responsibilities, concept and elements of a business plan (Market research, Marketing plan)
		Practical	
		Laboratory	
Week 7		Theoretical	Financial and legal responsibilities, concept and elements of a business plan (Market research, Marketing plan)
		Practical	
		Laboratory	
Week 8		Theoretical	Midterm Exam
		Practical	
		Laboratory	
Week 9		Theoretical	Concept and elements of a business plan (Production plan)
		Practical	
		Laboratory	
Week 10		Theoretical	Concept and elements of a business plan (Management plan)
		Practical	
		Laboratory	
Week 11		Theoretical	Concept and elements of a business plan (Financial plan)
		Practical	
		Laboratory	
Week 12		Theoretical	Workshop activities for business model and business plan (Market research, Marketing plan)
		Practical	
		Laboratory	
Week 13		Theoretical	Workshop activities for business model and business plan (Production plan)
		Practical	
		Laboratory	
Week 14		Theoretical	Workshop activities for business model and business plan (Management plan)
		Practical	
		Laboratory	
Week 15		Theoretical	Workshop activities for business model and business plan (Financial plan)
		Practical	
		Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	3	-	-	-	4	-	3	3	-	-	-	-	-	-	-
ÖÇ2	3	-	-	-	4	-	3	3	-	-	-	-	-	-	-
ÖÇ3	3	-	-	-	4	-	3	3	-	-	-	-	-	-	-

Course Name	Generative Artificial Intelligence		
Course Code	BVA 1203	Activity Type	Optional
Semester	Fall	Semester	1
Course Language	Turkish	National Credit	2
Hours Per Week	2	ECTS	3
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

The aim of this course is to introduce generative artificial intelligence techniques, particularly generative neural networks, language models, and related application areas, both theoretically and practically. Students will gain the competence to understand, train, and evaluate state-of-the-art generative AI models in various use cases.

The Aim of Course

Shortest path problems; Artificial intelligence methods: Artificial Neural Networks, Expert Systems, Fuzzy Logic

Learning Outcomes

1) Being able to apply artificial intelligence methods
2) Being able to use artificial neural networks
3) Being able to integrate technology into daily life

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes, Tiryaki, F. (2023). Yapay Zekâ ve Derin Öğrenme: Teori, Algoritmalar ve Uygulamalar. Papatya Yayıncılık, Yıldız, Ö. (2022). Derin Öğrenme ile Görüntü ve Metin Üretimi: GAN ve VAE Uygulamaları. Seçkin Yayıncılık, Goodfellow, I., Bengio, Y., & Courville, A. (2016). Deep Learning. MIT Press

Course Content		
Week	Topic	Content
Week 1	Theoretical	Introduction: Overview of Generative Artificial Intelligence
	Practical	
	Laboratory	
Week 2	Theoretical	Probabilistic Models and Foundations (Bayes' Theorem, Markov Chains)
	Practical	
	Laboratory	
Week 3	Theoretical	Autoencoders and Variational Autoencoders (VAE)
	Practical	
	Laboratory	

Week 4	Theoretical	Generative Adversarial Networks (GANs): Basic Structure and Training Process
	Practical	
	Laboratory	
Week 5	Theoretical	Types of GANs
	Practical	
	Laboratory	
Week 6	Theoretical	Hands-on GAN Training: Image Generation
	Practical	
	Laboratory	
Week 7	Theoretical	Transformers and Self-Attention Mechanism
	Practical	
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Large Language Models (LLM): GPT, BERT, T5
	Practical	
	Laboratory	
Week 10	Theoretical	Text Generation and Natural Language Processing Applications
	Practical	
	Laboratory	
Week 11	Theoretical	From Image to Text and Text to Image: Multimodal Models (DALL·E, CLIP)
	Practical	
	Laboratory	
Week 12	Theoretical	Ethics, Safety, and Misinformation
	Practical	
	Laboratory	
Week 13	Theoretical	Knowledge Representation in Artificial Intelligence
	Practical	
	Laboratory	
Week 14	Theoretical	AI Languages and Knowledge Base Construction
	Practical	
	Laboratory	
Week 15	Theoretical	R&D and Industrial Applications of Generative Artificial Intelligence
	Practical	
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	3	-	-	-	4	-	3	3	-	-	-	-	-	-	3
ÖÇ2	3	-	-	-	4	-	3	3	-	-	-	-	-	-	3
ÖÇ3	3	-	-	-	4	-	3	3	-	-	-	-	-	-	3

Course Name	Data Mining		
Course Code	BVA 1102	Activity Type	Compulsory
Semester	Fall	Semester	2
Course Language	Turkish	National Credit	4
Hours Per Week	4	ECTS	5
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

Data preprocessing, Exploratory Data Analysis (EDA), classification, prediction and clustering, association rule mining, evaluation and validation

The Aim of Course

Having general knowledge about data mining processes, data visualization, and clustering topics

Learning Outcomes

1) Understanding the concepts of data mining
2) Proficiency in data preprocessing
3) Skills in exploratory data analysis
4) Knowledge of data mining algorithms

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes

Course Content		
Week	Topic	Content
Week 1	Theoretical	Overview of Data Mining
	Practical	
	Laboratory	
Week 2	Theoretical	Data Mining Process
	Practical	
	Laboratory	
Week 3	Theoretical	Data Cleaning Techniques
	Practical	
	Laboratory	
Week 4	Theoretical	Handling Missing Values, Outlier Detection and Treatment
	Practical	Handling Missing Values, Outlier Detection and Treatment
	Laboratory	
Week 5	Theoretical	Data Transformation Methods
	Practical	Data Transformation Methods

	Laboratory	
Week 6	Theoretical	Data Visualization Techniques
	Practical	
	Laboratory	
Week 7	Theoretical	Correlation Analysis, Data Distribution Analysis
	Practical	Correlation Analysis, Data Distribution Analysis
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Decision Trees, Logistic Regression, Naive Bayes Classifier
	Practical	Decision Trees, Logistic Regression, Naive Bayes Classifier
	Laboratory	
Week 10	Theoretical	Model Evaluation Techniques
	Practical	
	Laboratory	
Week 11	Theoretical	Introduction to Clustering
	Practical	
	Laboratory	
Week 12	Theoretical	K-Means Clustering, Hierarchical Clustering, Evaluation of Clustering Results
	Practical	K-Means Clustering, Hierarchical Clustering, Evaluation of Clustering Results
	Laboratory	
Week 13	Theoretical	Market Basket Analysis, Frequent Itemsets, Association Rule Generation, Rule Evaluation and Pruning
	Practical	Market Basket Analysis, Frequent Itemsets, Association Rule Generation, Rule Evaluation and Pruning
	Laboratory	
Week 14	Theoretical	Feature Selection Techniques
	Practical	
	Laboratory	
Week 15	Theoretical	Principal Component Analysis (PCA)
	Practical	Principal Component Analysis (PCA)
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	3	-	-	-	3	-	-	-	-	-	4	4	-	-	-
ÖÇ2	3	-	-	-	3	-	-	-	-	-	4	4	-	-	-
ÖÇ3	3	-	-	-	3	-	-	-	-	-	4	4	-	-	-
ÖÇ4	3	-	-	-	3	-	-	-	-	-	4	4	-	-	-

Course Name	Fundamentals of Machine Learning		
Course Code	BVA 1104	Activity Type	Compulsory
Semester	Fall	Semester	2
Course Language	Turkish	National Credit	3
Hours Per Week	3	ECTS	4
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

Concepts of machine learning, modeling, clustering algorithms, artificial neural networks, supervised learning, decision tree

The Aim of Course

Having knowledge of the fundamentals of machine learning, algorithms, and regression analysis

Learning Outcomes

1) Understanding machine learning
2) Learning different learning methods
3) Mastery of artificial intelligence
4) Ability to perform error and complexity analysis

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes

Course Content

Week	Topic	Content
Week 1	Theoretical	Introduction to Machine Learning
	Practical	
	Laboratory	
Week 2	Theoretical	Data Preprocessing
	Practical	
	Laboratory	
Week 3	Theoretical	Supervised Learning Algorithms
	Practical	
	Laboratory	
Week 4	Theoretical	Decision Trees
	Practical	
	Laboratory	
Week 5	Theoretical	Model Selection and Evaluation Metrics
	Practical	

	Laboratory	
Week 6	Theoretical	Regression Analysis
	Practical	Regression Analysis
	Laboratory	
Week 7	Theoretical	Logistic Regression
	Practical	Logistic Regression
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Unsupervised Learning Algorithms
	Practical	Unsupervised Learning Algorithms
	Laboratory	
Week 10	Theoretical	Principal Component Analysis and Dimensionality Reduction
	Practical	
	Laboratory	
Week 11	Theoretical	Convolutional Neural Networks
	Practical	
	Laboratory	
Week 12	Theoretical	Artificial Neural Networks
	Practical	
	Laboratory	
Week 13	Theoretical	Deep Learning
	Practical	
	Laboratory	
Week 14	Theoretical	Image Processing
	Practical	Image Processing
	Laboratory	
Week 15	Theoretical	Natural Language Processing
	Practical	Natural Language Processing
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	3	-	-	-	3	-	-	-	-	-	4	4	-	-	-
ÖÇ2	3	-	-	-	3	-	-	-	-	-	4	4	-	-	-
ÖÇ3	3	-	-	-	3	-	-	-	-	-	4	4	-	-	-
ÖÇ4	3	-	-	-	3	-	-	-	-	-	4	4	-	-	-

Course Name	Database Technologies		
Course Code	BVA 1106	Activity Type	Compulsory
Semester	Fall	Semester	2
Course Language	Turkish	National Credit	4
Hours Per Week	3	ECTS	5
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

Database concepts, database design, application areas of database technologies

The Aim of Course

Acquiring the ability to design databases of different types

Learning Outcomes

1) Having basic knowledge of databases
2) Learning different types of databases
3) Ability to design databases
4) Mastery of the application areas of databases

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes

Course Content		
Week	Topic	Content
Week 1	Theoretical	Introduction to Databases
	Practical	
	Laboratory	
Week 2	Theoretical	Basic Concepts
	Practical	
	Laboratory	
Week 3	Theoretical	Types of Databases
	Practical	
	Laboratory	
Week 4	Theoretical	Data Types
	Practical	
	Laboratory	
Week 5	Theoretical	Concept of Database Technology
	Practical	
	Laboratory	

Week 6	Theoretical	Database Components
	Practical	Database Components
	Laboratory	
Week 7	Theoretical	Database Design Stages
	Practical	Database Design Stages
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Data Modeling
	Practical	Data Modeling
	Laboratory	
Week 10	Theoretical	Commonly Used Databases
	Practical	
	Laboratory	
Week 11	Theoretical	Relational Databases
	Practical	
	Laboratory	
Week 12	Theoretical	Types of Databases
	Practical	
	Laboratory	
Week 13	Theoretical	Commonly Used Database Systems
	Practical	
	Laboratory	
Week 14	Theoretical	Application Areas of Database Systems
	Practical	Application Areas of Database Systems
	Laboratory	
Week 15	Theoretical	Basic SQL Operations
	Practical	Basic SQL Operations
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	3	-	-	-	5	-	-	-	-	-	4	4	-	-	-
ÖÇ2	3	-	-	-	5	-	-	-	-	-	4	4	-	-	-
ÖÇ3	3	-	-	-	5	-	-	-	-	-	4	4	-	-	-
ÖÇ4	3	-	-	-	5	-	-	-	-	-	4	4	-	-	-

Course Name	Information Technologies		
Course Code	BVA 1108	Activity Type	Compulsory
Semester	Fall	Semester	2
Course Language	Turkish	National Credit	3
Hours Per Week	3	ECTS	3
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

Examining methods and techniques for accessing information and acquiring the skills to use them, programming languages, and current software applications

The Aim of Course

Providing basic knowledge about information technologies, enhancing skills in operating systems and office software applications

Learning Outcomes

1) Introducing basic concepts of information technology
2) Teaching basic computer hardware
3) Using at least one operating system
4) Using internet tools

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes

Course Content		
Week	Topic	Content
Week 1	Theoretical	Introduction to Information Technologies
	Practical	
	Laboratory	
Week 2	Theoretical	Information Technology Tools
	Practical	
	Laboratory	
Week 3	Theoretical	Basic Computer Hardware
	Practical	
	Laboratory	
Week 4	Theoretical	Basic Computer Software
	Practical	
	Laboratory	
Week 5	Theoretical	Hardware and Software Applications
	Practical	Hardware and Software Applications

	Laboratory	
Week 6	Theoretical	Operating System
	Practical	
	Laboratory	
Week 7	Theoretical	Programming Language
	Practical	Programming Language
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Introduction to Office Programs
	Practical	
	Laboratory	
Week 10	Theoretical	Word Processing Program
	Practical	
	Laboratory	
Week 11	Theoretical	Equation Editor, Drawing, and Graphics Creation
	Practical	Equation Editor, Drawing, and Graphics Creation
	Laboratory	
Week 12	Theoretical	Working with Tables
	Practical	Working with Tables
	Laboratory	
Week 13	Theoretical	Creating Presentation Files
	Practical	Creating Presentation Files
	Laboratory	
Week 14	Theoretical	Internet Environment
	Practical	
	Laboratory	
Week 15	Theoretical	Social Networks
	Practical	
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	3	-	5	5	-	-	-	-	-	-	-	-	-	-	-
ÖÇ2	3	-	5	5	-	-	-	-	-	-	-	-	-	-	-
ÖÇ3	3	-	5	5	-	-	-	-	-	-	-	-	-	-	-
ÖÇ4	3	-	5	5	-	-	-	-	-	-	-	-	-	-	-

Course Name	Big Data Technologies		
Course Code	BVA 1110	Activity Type	Compulsory
Semester	Fall	Semester	2
Course Language	Turkish	National Credit	4
Hours Per Week	4	ECTS	5
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

Data analysis, data visualization, applications of big data technologies, database systems

The Aim of Course

Mastering the fundamental principles of designing, implementing, and managing big data technologies

Learning Outcomes

1) Gaining basic knowledge in data processing technologies
2) Ability to perform data visualization
3) Data design and analysis skills
4) Awareness of data management skills

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes

Course Content		
Week	Topic	Content
Week 1	Theoretical	Introduction to Big Data Technologies
	Practical	
	Laboratory	
Week 2	Theoretical	Data Processing
	Practical	
	Laboratory	
Week 3	Theoretical	Data Storage
	Practical	
	Laboratory	
Week 4	Theoretical	Data Stream Creation
	Practical	Data Stream Creation
	Laboratory	
Week 5	Theoretical	Data Analysis
	Practical	Data Analysis

	Laboratory	
Week 6	Theoretical	Data Visualization
	Practical	
	Laboratory	
Week 7	Theoretical	Advanced Data Visualization
	Practical	Advanced Data Visualization
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Big Data Management
	Practical	Big Data Management
	Laboratory	
Week 10	Theoretical	Big Data Solutions
	Practical	Big Data Solutions
	Laboratory	
Week 11	Theoretical	Big Data in the Cloud
	Practical	
	Laboratory	
Week 12	Theoretical	Algorithm Creation
	Practical	Algorithm Creation
	Laboratory	
Week 13	Theoretical	Big Data Architectures
	Practical	Big Data Architectures
	Laboratory	
Week 14	Theoretical	Analytical Applications
	Practical	Analytical Applications
	Laboratory	
Week 15	Theoretical	Big Data Technologies in Industries
	Practical	
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	-	-	-	4	-	-	-	-	-	-	-	4	-	3	-
ÖÇ2	-	-	-	4	-	-	-	-	-	-	-	4	-	3	-
ÖÇ3	-	-	-	4	-	-	-	-	-	-	-	4	-	3	-
ÖÇ4	-	-	-	4	-	-	-	-	-	-	-	4	-	3	-
ÖÇ5	-	-	-	4	-	-	-	-	-	-	-	4	-	3	-

Course Name	Advanced Data Analytics		
Course Code	BVA 1112	Activity Type	Compulsory
Semester	Fall	Semester	2
Course Language	Turkish	National Credit	5
Hours Per Week	5	ECTS	4
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

Data modeling, data analysis, data science applications, data science programming languages

The Aim of Course

Gaining programming skills in data science, providing practical application experience in data modeling and big data processing

Learning Outcomes

1) Data Modeling
2) Data Analysis
3) Programming Skills
4) Data Processing

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes

Course Content		
Week	Topic	Content
Week 1	Theoretical	Fundamental Concepts in Data Science
	Practical	
	Laboratory	
Week 2	Theoretical	Advanced Data Modeling
	Practical	
	Laboratory	
Week 3	Theoretical	Statistical Concepts for Data Analysis
	Practical	Statistical Concepts for Data Analysis
	Laboratory	
Week 4	Theoretical	Fundamentals of Big Data Processing
	Practical	
	Laboratory	
Week 5	Theoretical	Dataset Analysis Techniques
	Practical	

	Laboratory	
Week 6	Theoretical	Processing Datasets
	Practical	Processing Datasets
	Laboratory	
Week 7	Theoretical	Machine Learning Algorithms
	Practical	Machine Learning Algorithms
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Machine Learning on Datasets
	Practical	Machine Learning on Datasets
	Laboratory	
Week 10	Theoretical	Introduction to Programming Language
	Practical	
	Laboratory	
Week 11	Theoretical	Functional Programming
	Practical	Functional Programming
	Laboratory	
Week 12	Theoretical	Object-Oriented Programming
	Practical	Object-Oriented Programming
	Laboratory	
Week 13	Theoretical	Modular Programming
	Practical	Modular Programming
	Laboratory	
Week 14	Theoretical	Fundamentals of Deep Learning
	Practical	
	Laboratory	
Week 15	Theoretical	Advanced Analytical Applications
	Practical	Advanced Analytical Applications
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	3	-	-	-	3	-	-	-	-	-	4	4	3	-	-
ÖÇ2	3	-	-	-	3	-	-	-	-	-	4	4	3	-	-
ÖÇ3	3	-	-	-	3	-	-	-	-	-	4	4	3	-	-
ÖÇ4	3	-	-	-	3	-	-	-	-	-	4	4	3	-	-

Course Name	Social Responsibility		
Course Code	BVA 1114	Activity Type	Compulsory
Semester	Fall	Semester	2
Course Language	Turkish	National Credit	1
Hours Per Week	1	ECTS	1
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

In this course, students will learn about social responsibility concept, purpose and importance; The development of social responsibility in society; Civil society organizations and their places in social responsibility, social responsibility projects in the world and in Türkiye.

The Aim of Course

It is expected from students to identify environmental problems like social, natural, cultural and so on, to develop interdisciplinary cooperation for the solution of the problem, Continuity without compromising the process objective, to share their results with the public.

Learning Outcomes

1) To be able to identify problems that concern social life
2. To be able to solve to existing problems and to be able to produce projects
3. To be able to do intedisipliner studies

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes

Course Content		
Week	Topic	Content
Week 1	Theoretical	Social Responsibility Concept, aim and importance
	Practical	
	Laboratory	
Week 2	Theoretical	History of Social Responsibility
	Practical	
	Laboratory	
Week 3	Theoretical	Development of Social Responsibility
	Practical	
	Laboratory	
Week 4	Theoretical	Relationship between community and social responsibility
	Practical	
	Laboratory	
Week 5	Theoretical	Relationship between individual and social responsibility

	Practical	
	Laboratory	
Week 6	Theoretical	Relationship between individual and social responsibility
	Practical	
	Laboratory	
Week 7	Theoretical	Definition, mission and purpose of civil society organizations
	Practical	
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Civil society organizations' place in social responsibility projects
	Practical	
	Laboratory	
Week 10	Theoretical	Social responsibility projects in the world and Turkey
	Practical	
	Laboratory	
Week 11	Theoretical	Phantasmal phases of social responsibility projects
	Practical	
	Laboratory	
Week 12	Theoretical	Identification of student projects
	Practical	
	Laboratory	
Week 13	Theoretical	Project presentations
	Practical	
	Laboratory	
Week 14	Theoretical	Project presentations
	Practical	
	Laboratory	
Week 15	Theoretical	Project presentations
	Practical	
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	-	-	-	-	-	4	4	-	-	-	-	-	-	-	-
ÖÇ2	-	-	-	-	-	4	4	-	-	-	-	-	-	-	-
ÖÇ3	-	-	-	-	-	4	4	-	-	-	-	-	-	-	-

Course Name	Professional Mathematics		
Course Code	BVA 1208	Activity Type	Optional
Semester	Spring	Semester	2
Course Language	Turkish	National Credit	2
Hours Per Week	2	ECTS	3
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

Numbers, exponential and radical numbers, absolute value, factoring, solving equations, problems

The Aim of Course

To teach fundamental mathematical concepts. To enable students to think analytically and develop their mathematical approaches to programming.

Learning Outcomes

1) Teaaching fundamental mathematical concepts
2) To enable students to think analytically and develop their mathematical approaches to programming

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes, Matematik, Açık Öğretim yayınları, Yıldız, C. (2020). Meslek Yüksekokulları İçin Matematik. Nobel Akademik Yayıncılık, Kreyszig, E. (2011). Advanced Engineering Mathematics (10th Ed.). Wiley.

Course Content		
Week	Topic	Content
Week 1	Theoretical	Numbers
	Practical	
	Laboratory	
Week 2	Theoretical	Numbers
	Practical	
	Laboratory	
Week 3	Theoretical	Numbers
	Practical	
	Laboratory	
Week 4	Theoretical	Numbers
	Practical	
	Laboratory	
Week 5	Theoretical	Numbers
	Practical	

	Laboratory	
Week 6	Theoretical	Exponential and radical numbers
	Practical	
	Laboratory	
Week 7	Theoretical	Exponential and radical numbers
	Practical	
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Exponential and radical numbers
	Practical	
	Laboratory	
Week 10	Theoretical	Absolute value
	Practical	
	Laboratory	
Week 11	Theoretical	Factoring
	Practical	
	Laboratory	
Week 12	Theoretical	Factoring
	Practical	
	Laboratory	
Week 13	Theoretical	Solving equations
	Practical	
	Laboratory	
Week 14	Theoretical	Solving equations
	Practical	
	Laboratory	
Week 15	Theoretical	Problems
	Practical	
	Laboratory	

Program and Learning Outcomes Relations														
ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	3	-	-	-	4	-	3	3	-	-	-	-	-	-	3
ÖÇ2	3	-	-	-	4	-	3	3	-	-	-	-	-	-	3

Course Name	Sustainable Development and Information Technologies		
Course Code	BVA 1222	Activity Type	Optional
Semester	Spring	Semester	2
Course Language	Turkish	National Credit	2
Hours Per Week	2	ECTS	3
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

Numbers, exponential and radical numbers, absolute value, factoring, solving equations, problems

The Aim of Course

Sustainability concept and usage areas; sustainability in terms of social sciences and science; sustainability in the context of social change; education and sustainability; the future of humanity and sustainability; immigration, poverty and inequality; sustainable environment; ecology, global environmental problems and sustainability; sustainable society in harmony with nature; population, economic system and natural environment; technological developments, consumption habits and the environment; social responsibility studies, sustainability in terms of tangible and intangible cultural heritage; the rethinking of human-nature relations on the axis of sustainability..

Learning Outcomes

1) The student explains the economic aspect of education
2) The student understands the concept of economic development
3) The student analyzes the relationship between economic development and education
4) The student identifies the externalities of education
5) The student analyzes the relationship between social inequality and education
6) The student explains the relationship between employment and education
7) The student understands the importance of transmitting cultural heritage in economic development

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes, Günkör, C. (2017). Eğitim ve kalkınma ilişkisinin incelenmesi. Uluslararası Sosyal Bilimler Eğitimi Dergisi, 3(1), 14-32. Karakütük, K. (2012). Eğitim Planlaması. Elhan Hanusek, E. ve Woessmann, L. (2007). The role of education quality for economic growth. World Bank Policy Research Working Paper No. 4122. Gürlük, S. (2010). Sürdürülebilir kalkınma gelişmekte olan ülkelerde uygulanabilir mi? Eskişehir Osmangazi Üniversitesi İİBF Dergisi, 5(2), 85-99.

Course Content		
Week	Topic	Content
Week 1	Theoretical	Basic economic concepts
	Practical	

	Laboratory	
Week 2	Theoretical	The relationship between education and economy
	Practical	
	Laboratory	
Week 3	Theoretical	Relationship between development and education
	Practical	
	Laboratory	
Week 4	Theoretical	Man power planning
	Practical	
	Laboratory	
Week 5	Theoretical	Sustainability concept
	Practical	
	Laboratory	
Week 6	Theoretical	Sustainable development and education
	Practical	
	Laboratory	
Week 7	Theoretical	Environmental education and sustainable development
	Practical	
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Human capital and education
	Practical	
	Laboratory	
Week 10	Theoretical	Migration, education and development
	Practical	
	Laboratory	
Week 11	Theoretical	Education in the context of globalization
	Practical	
	Laboratory	
Week 12	Theoretical	Education and teaching in the information society
	Practical	
	Laboratory	
Week 13	Theoretical	Industry 4.0 and the new educational qualities required
	Practical	
	Laboratory	
Week 14	Theoretical	Lifelong learning
	Practical	
	Laboratory	
Week 15	Theoretical	Lifelong learning
	Practical	
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	3	-	-	4	4	-	3	3	-	-	-	-	-	-	-
ÖÇ2	3	-	-	4	4	-	3	3	-	-	-	-	-	-	-
ÖÇ3	3	-	-	4	4	-	3	3	-	-	-	-	-	-	-
ÖÇ4	3	-	-	4	4	-	3	3	-	-	-	-	-	-	-
ÖÇ5	3	-	-	4	4	-	3	3	-	-	-	-	-	-	-
ÖÇ6	3	-	-	4	4	-	3	3	-	-	-	-	-	-	-
ÖÇ7	3	-	-	4	4	-	3	3	-	-	-	-	-	-	-

Course Name	Applied Data Analysis		
Course Code	BVA 2101	Activity Type	Compulsory
Semester	Fall	Semester	3
Course Language	Turkish	National Credit	4
Hours Per Week	4	ECTS	5
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

Statistical concepts, data collection and cleaning, data visualization, descriptive analysis, inferential analysis, regression analysis, time series analysis

The Aim of Course

Teaching big data analytics applications

Learning Outcomes

1) Gaining data cleaning and preprocessing skills
2) Developing data visualization proficiency
3) Acquiring descriptive and inferential analysis proficiency
4) Building regression and time series analysis proficiency

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes

Course Content		
Week	Topic	Content
Week 1	Theoretical	Introduction to Data Analysis and Fundamental Concepts
	Practical	
	Laboratory	
Week 2	Theoretical	Statistical Foundations: Measures of Central Tendency and Dispersion
	Practical	
	Laboratory	
Week 3	Theoretical	Probability and Probability Distributions
	Practical	
	Laboratory	
Week 4	Theoretical	Data Collection Methods and Data Cleaning
	Practical	
	Laboratory	
Week 5	Theoretical	Data Visualization: Charts, Tables, and Graphs
	Practical	

	Laboratory	
Week 6	Theoretical	Descriptive Statictics and Summary Statistics
	Practical	Descriptive Statictics and Summary Statistics
	Laboratory	
Week 7	Theoretical	Inferential Statistics: Confidence Intervals and Hypothesis Testing
	Practical	Inferential Statistics: Confidence Intervals and Hypothesis Testing
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Regression Analysis: Simple and Multiple Regression Models
	Practical	Regression Analysis: Simple and Multiple Regression Models
	Laboratory	
Week 10	Theoretical	Time Series Analysis and Examination of Trends
	Practical	Time Series Analysis and Examination of Trends
	Laboratory	
Week 11	Theoretical	Fundamentals of Data Mining: Classification and Clustering
	Practical	Fundamentals of Data Mining: Classification and Clustering
	Laboratory	
Week 12	Theoretical	Machine Learning: Supervised and Unsupervised Learning
	Practical	
	Laboratory	
Week 13	Theoretical	Big Data and Data Analysis Applications
	Practical	Big Data and Data Analysis Applications
	Laboratory	
Week 14	Theoretical	Ethical and Legal Issues: Data Privacy and Security
	Practical	
	Laboratory	
Week 15	Theoretical	Data Analysis Applications: Real-World Datasets with Industrial and Academic Examples
	Practical	Data Analysis Applications: Real-World Datasets with Industrial and Academic Examples
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	-	-	-	-	-	-	3	-	-	-	4	4	4	4	-
ÖÇ2	-	-	-	-	-	-	3	-	-	-	4	4	4	4	-
ÖÇ3	-	-	-	-	-	-	3	-	-	-	4	4	4	4	-
ÖÇ4	-	-	-	-	-	-	3	-	-	-	4	4	4	4	-

Course Name	Cloud Computing for Big Data		
Course Code	BVA 2103	Activity Type	Compulsory
Semester	Fall	Semester	3
Course Language	Turkish	National Credit	4
Hours Per Week	3	ECTS	4
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

Cloud infrastructure, data storage and management in the cloud, big data processing frameworks, data analytics and machine learning in the cloud, security and privacy considerations

The Aim of Course

Gaining knowledge about cloud computing platforms and cloud infrastructure

Learning Outcomes

1) Expertise in big data fundamentals
2) Familiarity with cloud infrastructure
3) Gaining skills in data storage and management
4) Expertise in big data processing frameworks

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes

Course Content		
Week	Topic	Content
Week 1	Theoretical	Introduction to Cloud Computing
	Practical	
	Laboratory	
Week 2	Theoretical	Overview of Big Data Concepts
	Practical	
	Laboratory	
Week 3	Theoretical	Cloud Service Models: Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS)
	Practical	
	Laboratory	
Week 4	Theoretical	Cloud Deployment Models
	Practical	
	Laboratory	
Week 5	Theoretical	Major Cloud Computing Platforms: AWS, Azure, GCP
	Practical	

	Laboratory	
Week 6	Theoretical	Cloud Storage Solutions for Big Data
	Practical	
	Laboratory	
Week 7	Theoretical	Introduction to Distributed Computing Frameworks
	Practical	
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Hadoop: Architecture and Components
	Practical	
	Laboratory	
Week 10	Theoretical	Hadoop MapReduce Programming
	Practical	
	Laboratory	
Week 11	Theoretical	Spark: Introduction and Key Concepts
	Practical	
	Laboratory	
Week 12	Theoretical	Spark RDDs (Resilient Distributed Datasets)
	Practical	
	Laboratory	
Week 13	Theoretical	Data Analytics in the Cloud
	Practical	
	Laboratory	
Week 14	Theoretical	Machine Learning in the Cloud
	Practical	
	Laboratory	
Week 15	Theoretical	Security and Privacy in Cloud Computing
	Practical	
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	-	-	-	-	-	-	-	-	-	-	4	4	4	4	-
ÖÇ2	-	-	-	-	-	-	-	-	-	-	4	4	4	4	-
ÖÇ3	-	-	-	-	-	-	-	-	-	-	4	4	4	4	-
ÖÇ4	-	-	-	-	-	-	-	-	-	-	4	4	4	4	-

Course Name	Social Network Analysis		
Course Code	BVA 2105	Activity Type	Compulsory
Semester	Fall	Semester	3
Course Language	Turkish	National Credit	2
Hours Per Week	2	ECTS	2
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

Network theory, network data collection, network analysis techniques, social network dynamics, network-based interventions

The Aim of Course

Specializing in data collection and network analysis

Learning Outcomes

1) Proficiency in network analysis techniques
2) Data collection skills
3) Competence in network analysis
4) Understanding social network dynamics
5) Proficiency in network-based interventions

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes

Course Content		
Week	Topic	Content
Week 1	Theoretical	Network Centrality Measures
	Practical	
	Laboratory	
Week 2	Theoretical	Network Visualization Techniques
	Practical	
	Laboratory	
Week 3	Theoretical	Social Network Data Collection Methods
	Practical	
	Laboratory	
Week 4	Theoretical	Exponential Random Graph Models (ERGM)
	Practical	
	Laboratory	
Week 5	Theoretical	Community Detection Algorithms
	Practical	

	Laboratory	
Week 6	Theoretical	Actor-Centric Models
	Practical	
	Laboratory	
Week 7	Theoretical	Longitudinal Network Analysis
	Practical	
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Multilevel Network Analysis
	Practical	
	Laboratory	
Week 10	Theoretical	Network Dynamics and Evolution
	Practical	
	Laboratory	
Week 11	Theoretical	Influence and Propagation in Networks
	Practical	
	Laboratory	
Week 12	Theoretical	Network Resilience and Robustness
	Practical	
	Laboratory	
Week 13	Theoretical	Network Sampling Techniques
	Practical	
	Laboratory	
Week 14	Theoretical	Network-Based Machine Learning
	Practical	
	Laboratory	
Week 15	Theoretical	Network Ethics and Privacy Issues
	Practical	
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	-	-	-	-	-	-	4	-	-	-	4	4	4	4	-
ÖÇ2	-	-	-	-	-	-	4	-	-	-	4	4	4	4	-
ÖÇ3	-	-	-	-	-	-	4	-	-	-	4	4	4	4	-
ÖÇ4	-	-	-	-	-	-	4	-	-	-	4	4	4	4	-
ÖÇ5	-	-	-	-	-	-	4	-	-	-	4	4	4	4	-

Course Name	Data Visualization		
Course Code	BVA 2107	Activity Type	Compulsory
Semester	Fall	Semester	3
Course Language	Turkish	National Credit	3
Hours Per Week	3	ECTS	5
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

Data types and sources, data cleaning and preparation, visualization principles, basic visualization techniques, dashboard designs

The Aim of Course

Gaining knowledge about design and visualization techniques according to data types

Learning Outcomes

1) Proficiency in visualization tools
2) Understanding visualization principles
3) Ability to create basic and advanced visualizations
4) Data preparation skills

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes

Course Content		
Week	Topic	Content
Week 1	Theoretical	The Importance and Basic Principles of Data Visualization
	Practical	
	Laboratory	
Week 2	Theoretical	Introduction to Popular Data Visualization Tools
	Practical	
	Laboratory	
Week 3	Theoretical	Overview of Visualization Software
	Practical	
	Laboratory	
Week 4	Theoretical	Data Types
	Practical	
	Laboratory	
Week 5	Theoretical	Finding, Accessing, Cleaning, and Preparing Data for Visualization Projects

	Practical	Finding, Accessing, Cleaning, and Preparing Data for Visualization Projects
	Laboratory	
Week 6	Theoretical	Visual Perception and Cognition
	Practical	Visual Perception and Cognition
	Laboratory	
Week 7	Theoretical	Color Theory and Color Selection, Choosing Appropriate Chart Types for Different Data Types
	Practical	Color Theory and Color Selection, Choosing Appropriate Chart Types for Different Data Types
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Multilevel Network Analysis
	Practical	
	Laboratory	
Week 10	Theoretical	Creating Bar Charts, Line Charts, and Scatter Plots
	Practical	Creating Bar Charts, Line Charts, and Scatter Plots
	Laboratory	
Week 11	Theoretical	Designing Pie Charts
	Practical	Designing Pie Charts
	Laboratory	
Week 12	Theoretical	Customizing Visualizations for Clarity and Effectiveness
	Practical	
	Laboratory	
Week 13	Theoretical	Creating Heatmaps and Tree Maps
	Practical	Creating Heatmaps and Tree Maps
	Laboratory	
Week 14	Theoretical	Introduction to Interactive Visualizations and Tools
	Practical	
	Laboratory	
Week 15	Theoretical	Dashboard Design Principles
	Practical	
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	4	-	-	-	-	-	4	-	-	-	-	-	-	-	-
ÖÇ2	4	-	-	-	-	-	4	-	-	-	-	-	-	-	-
ÖÇ3	4	-	-	-	-	-	4	-	-	-	-	-	-	-	-
ÖÇ4	4	-	-	-	-	-	4	-	-	-	-	-	-	-	-

Course Name	R&D in Big Data Analytics Data Visualization		
Course Code	BVA 2109	Activity Type	Compulsory
Semester	Fall	Semester	3
Course Language	Turkish	National Credit	4
Hours Per Week	4	ECTS	5
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

Improving R&D Processes with Topics such as Data Collection, Analysis, Visualization, and Artificial Intelligence Applications

The Aim of Course

Büyük veri teknolojilerini kullanarak araştırma ve geliştirme (Ar-Ge) süreçlerinin nasıl desteklendiğini öğretmek

Learning Outcomes

1) Mastering the concept and process of R&D
2) Understanding the role of big data in R&D processes
3) Being able to use artificial intelligence and data science tools in the context of R&D
4) Competence in the use of big data in sector-specific R&D applications

Evaluation Criteria

Midterm (%40) Final (%60)

Recommended or Required Reading

Lecture notes

Course Content		
Week	Topic	Content
Week 1	Theoretical	Basic Concepts
	Practical	
	Laboratory	
Week 2	Theoretical	Big Data Ecosystem and Technologies
	Practical	
	Laboratory	
Week 3	Theoretical	The Role of Big Data in R&D Processes
	Practical	The Role of Big Data in R&D Processes
	Laboratory	
Week 4	Theoretical	Data Collection and Data Sources
	Practical	
	Laboratory	
Week 5	Theoretical	Data Cleaning
	Practical	Data Cleaning

	Laboratory	
Week 6	Theoretical	Data Preprocessing
	Practical	Data Preprocessing
	Laboratory	
Week 7	Theoretical	Data Analysis Methods for R&D
	Practical	Data Analysis Methods for R&D
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Visualization Techniques in Big Data
	Practical	Visualization Techniques in Big Data
	Laboratory	
Week 10	Theoretical	New Product Development with Data
	Practical	New Product Development with Data
	Laboratory	
Week 11	Theoretical	Decision Support Systems and R&D
	Practical	
	Laboratory	
Week 12	Theoretical	Improving R&D Processes with Artificial Intelligence
	Practical	
	Laboratory	
Week 13	Theoretical	Fundamentals of R&D-Oriented Machine Learning
	Practical	
	Laboratory	
Week 14	Theoretical	Sector-Specific R&D Applications
	Practical	Sector-Specific R&D Applications
	Laboratory	
Week 15	Theoretical	Sector-Specific R&D Applications
	Practical	Sector-Specific R&D Applications
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	3	-	-	-	3	-	3	-	-	-	4	4	3	-	-
ÖÇ2	3	-	-	-	3	-	3	-	-	-	4	4	3	-	-
ÖÇ3	3	-	-	-	3	-	3	-	-	-	4	4	3	-	-
ÖÇ4	3	-	-	-	3	-	3	-	-	-	4	4	3	-	-

Course Name	Vocational Training in Workplace		
Course Code	MYO 2002	Activity Type	Compulsory
Semester	Fall	Semester	4
Course Language	Turkish	National Credit	4
Hours Per Week	5	ECTS	18
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Nur Erdem
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

To find opportunity to apply their knowledge in public or private organizations in accordance with the lessons they have seen, to apply production and service processes in the workplace.

The Aim of Course

To develop students' knowledge, skills, attitudes and working habits in their learning periods, skills and experiences in laboratory and workshop practices, to provide their responsibilities, relationships, organization and production processes and new technologies to learn.

Learning Outcomes

1) To be able to prepare for business
2. To be able to be ready to group work
3. To be able to improve knowledge and skill of production methods
4. To be able to understand the importance of quality and control in manufacturing

Evaluation Criteria

Vize (%40) Final (%60)

Recommended or Required Reading

Manisa Celal Bayar University Vocational Training in Workplace Directive

Course Content		
Week	Topic	Content
Week 1	Theoretical	Introducing the internship, studying the physical possibilities of the employer
	Practical	Inspection, observation and reporting of work done
	Laboratory	
Week 2	Theoretical	To do maintenance, repair and assembly applications related to the field of industry
	Practical	Inspection, observation and reporting of work done
	Laboratory	
Week 3	Theoretical	To do maintenance, repair and assembly applications related to the field of industry
	Practical	Inspection, observation and reporting of work done
	Laboratory	

Week 4	Theoretical	To do maintenance, repair and assembly applications related to the field of industry
	Practical	Inspection, observation and reporting of work done
	Laboratory	
Week 5	Theoretical	To do maintenance, repair and assembly applications related to the field of industry
	Practical	Inspection, observation and reporting of work done
	Laboratory	
Week 6	Theoretical	To do maintenance, repair and assembly applications related to the field of industry
	Practical	Inspection, observation and reporting of work done
	Laboratory	
Week 7	Theoretical	To do maintenance, repair and assembly applications related to the field of industry
	Practical	Inspection, observation and reporting of work done
	Laboratory	
Week 8	Theoretical	To do maintenance, repair and assembly applications related to the field of industry
	Practical	Inspection, observation and reporting of work done
	Laboratory	
Week 9	Theoretical	To do maintenance, repair and assembly applications related to the field of industry
	Practical	Inspection, observation and reporting of work done
	Laboratory	
Week 10	Theoretical	To do maintenance, repair and assembly applications related to the field of industry
	Practical	Inspection, observation and reporting of work done
	Laboratory	
Week 11	Theoretical	To do maintenance, repair and assembly applications related to the field of industry
	Practical	Inspection, observation and reporting of work done
	Laboratory	
Week 12	Theoretical	To do maintenance, repair and assembly applications related to the field of industry
	Practical	Inspection, observation and reporting of work done
	Laboratory	
Week 13	Theoretical	To do maintenance, repair and assembly applications related to the field of industry
	Practical	Inspection, observation and reporting of work done
	Laboratory	
Week 14	Theoretical	To do maintenance, repair and assembly applications related to the field of industry
	Practical	Inspection, observation and reporting of work done
	Laboratory	
Week 15	Theoretical	To do maintenance, repair and assembly applications related to the field of industry
	Practical	Inspection, observation and reporting of work done
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	5	-	5	-	4	-	5	-	-	-	-	-	-	-	-
ÖÇ2	5	-	5	-	4	-	5	-	-	-	-	-	-	-	-
ÖÇ3	5	-	5	-	4	-	5	-	-	-	-	-	-	-	-
ÖÇ4	5	-	5	-	4	-	5	-	-	-	-	-	-	-	-

Course Name	Atatürk's Principles and History of Revolution		
Course Code	AIT 2102	Activity Type	Compulsory
Semester	Fall	Semester	4
Course Language	Turkish	National Credit	4
Hours Per Week	4	ECTS	4
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Serkan Canseven
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

1- The purpose of teaching the course on Atatürk's Principles and the History of Revolution 2 - The reasons for the fall of the Ottoman Empire 3 - World War I and its outcomes

The Aim of Course

1- Ataturk's principles and reforms, independent, democratic and secular training of generations 2 - Turkish youth, to gain confidence in national history and consciousness 3 - Basic understand the dynamics of Turkish Modernization

Learning Outcomes

1) To be able to comprehend developments in European history and Ottoman modernization
2. To be able to decline the Ottoman Empire to explain the reasons
3. To be able to learn the causes and consequences of World War I
4. To be able to understand Turkish National Struggle,
5. To be able to understand the foundation philosophy of the Republic of Turkey better

Evaluation Criteria

Midterm (%20) Final (%80)

Recommended or Required Reading

1- Atatürk's Lectures and Statements 2- Atatürk's Principles and History of Turkish Revolution Prof. Dr. Refik Turan Prof. Dr. Mustafa Safran Prof. Dr. Necdet Hayta

Course Content		
Week	Topic	Content
Week 1	Theoretical	The Purpose of Studying the Course on Atatürk's Principles and History of the Turkish Revolution Mustafa Kemal Pasha's Arrival in Samsun and the Congresses
	Practical	
	Laboratory	
Week 2	Theoretical	The Collapse of the Ottoman Empire
	Practical	
	Laboratory	
Week 3	Theoretical	The Tanzimat Era and the First Constitutional Monarchy
	Practical	

	Laboratory	
Week 4	Theoretical	The Second Constitutional Monarchy and the Reasons Behind the Turkish Revolution
	Practical	
	Laboratory	
Week 5	Theoretical	World War I and the Armistice of Mondros
	Practical	
	Laboratory	
Week 6	Theoretical	The General Situation of the Country in the Face of Occupations and Mustafa Kemal Pasha's Reaction
	Practical	
	Laboratory	
Week 7	Theoretical	Mustafa Kemal Pasha's Arrival in Samsun and the Congresses
	Practical	
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	The Opening of Meclis-i Mebusan and Misak-ı Milli
	Practical	
	Laboratory	
Week 10	Theoretical	The National Forces (Kuva-yı Milliye)
	Practical	
	Laboratory	
Week 11	Theoretical	The Opening and Structure of the Grand National Assembly of Turkey
	Practical	
	Laboratory	
Week 12	Theoretical	The Eastern and Southern Fronts
	Practical	
	Laboratory	
Week 13	Theoretical	The Battles of I. and II. İnönü, The Battle of Sakarya, the Great Offensive, and the Armistice of Mudanya
	Practical	
	Laboratory	
Week 14	Theoretical	The Treaty of Lausanne
	Practical	
	Laboratory	
Week 15	Theoretical	The Proclamation of the Republic and Turkey's Geopolitical Position
	Practical	
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-
ÖÇ2	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-
ÖÇ3	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-
ÖÇ4	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-
ÖÇ5	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-

Course Name	Turkish Language		
Course Code	TDL 2102	Activity Type	Compulsory
Semester	Fall	Semester	4
Course Language	Turkish	National Credit	4
Hours Per Week	4	ECTS	4
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Mustafa Yemiş
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

Each student in the graduate and undergraduate education, according to comprehend the main language structure and function of language-thought in terms of connectivity, through written and oral expression, the Turkish right and gain the ability to use beautiful, these rules and native speakers of the language in an awareness of judges and they will have to make. The perfect way to express ideas in accordance with the purpose of rhetoric, including the necessary rules (speaking) knowledge of each profession for educated young people has become a very important need. In this regard, given to institutions of higher education courses in Turkish language, Turkish, and literature courses in high schools as a continuation of the rhetoric, especially in the field will be useful to intensify. On the other hand, a written essay as well as young people, to acquire the habit of speaking correctly and effectively is an issue that should not be neglected. Western countries, drawing upon the books written on this topic, Turkish course programs to address the audience, it is possible to teach techniques and methods of the rule. In this regard, particularly as Ataturk, the Turkish speecher's valuable speech will be taken to benefit from the texts

The Aim of Course

The overall objective of this course, individuals who understand the subtlety and depth listening, and reading the Turkish language-rich, well-established and productive to show that a language, language and consciousness awaken love, pleasure and acquire the habit of reading, to adopt the core values of Turkish society; briefly thinking and communication skills of individuals to develop.

Learning Outcomes

1. To be able to explain the characteristics of Turkish language by sensing its usage procedure with examples.
2. To be able to express the function, dimensions of language and its relationship with thought, culture, and society.
3. To be able to distinguish between the concepts of spoken language and written language;
4. To be able to analyze a text they read or follow a program they watch.
5. To be able to correctly and affectively express their feelings, thoughts, impressions, observations both in written and
spoken language.
6. To be able to identify the historical background of Turkish and its location among world languages;
7. To be able to apply the basic concepts of morphology;
8. To be able to explain the concepts about syntax and semantics.
9. To be able to identify the mistakes in the usage of the language and show them on the texts.
10. To be able to become an individual who is tolerant and cares about his values, and also, someone who can find solutions to the problems and correctly express his ideas about these problems both in written and spoken language.

Evaluation Criteria

Midterm (%20) Final (%80)	

Recommended or Required Reading

Aksan, Dogan, Every Direction Language / Linguistics with Main Lines, c.1,2,3, Turkish Language Institution, 1979-1982 Aksoy, Ömer Asım, Dictionary of Proverbs, İnkilap Bookstore, January 1988Aksoy, Ömer Asım, Dictionary of Idioms, İnkilap Bookstore, January 1988Atatürk, Mustafa Kemal, SpeechBanguoğlu, Tahsin, Turkish Grammer, Turkish Language Institute Publications, 2000Bozkurt, Fuat, Turkish, Istanbul, 1975Buckley, Reid, Speaking at the Community, System Publishing, May 2001Dilçin, Cem, New Screening Dictionary, Ankara, 1983Ergin, Muharrem, Turkish Language for Universities, Bayrak Publications, 2002Gencan, Tahir Nejat, Grammar, Ayraç Publishing House, October 2001Karaalioğlu, Seyit Kemal, Composition Art, Istanbul, January 1999Karahan, Leyla, Türkçede Syntax, Akçağ Publications, 1999Kudret, Cevdet, Literature Information by Examples, c. 1, 2, İnkılap Bookstore, 1980Koç, Nurettin, New Grammar, Istanbul, 1990Moran, Berna, A Critical Look at Turkish Names, c. 1, 2, 3, Communication Publications, 1983-1994Özdemir, Emin, Güzel and Effective Speech Art, Remzi Bookstore, January 1999Özen, Mustafa Nihat, Introduction to Writing Art and Composition, İstanbul, 1971

Course Content

Week	Topic	Content
Week 1	Theoretical	What is language? In people's life the importance of language as a social institution
	Practical	
	Laboratory	
Week 2	Theoretical	Language in terms of structure and origin. Place of Turkish language among world
	Practical	
	Laboratory	
Week 3	Theoretical	The development of Turkish written language. Historical stages of Turkish written
	Practical	
	Laboratory	
Week 4	Theoretical	The current status of the Turkish language, expansion areas of the Turkish language
	Practical	
	Laboratory	
Week 5	Theoretical	Phonetic, sounds in Turkish and its classification.
	Practical	
	Laboratory	
Week 6	Theoretical	Turkish sound features and sound knowledge of the rules
	Practical	
	Laboratory	
Week 7	Theoretical	Spelling rules and application
	Practical	
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Spelling rules and its applications
	Practical	
	Laboratory	
Week 10	Theoretical	Punctuation and its applications
	Practical	
	Laboratory	
Week 11	Theoretical	Morphology, Vocabulary, and Word Formation. Ways of Expressing New Concepts in Language
	Practical	

Week 12	Laboratory	
	Theoretical	Derivational and Inflectional Suffixes, Word Analysis
	Practical	
	Laboratory	
Week 13	Theoretical	The word types. Noun, adjective
	Practical	
	Laboratory	
Week 14	Theoretical	The word types. Adverb, pronouns, prepositions, conjunctions and interjections
	Practical	
	Laboratory	
Week 15	Theoretical	The word types. Adverb, pronouns, prepositions, conjunctions and interjections
	Practical	
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-
ÖÇ2	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-
ÖÇ3	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-
ÖÇ4	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-
ÖÇ5	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-
ÖÇ6	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-
ÖÇ7	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-
ÖÇ8	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-
ÖÇ9	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-
ÖÇ10	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-

Course Name	Foreign Language		
Course Code	YDI 2102	Activity Type	Compulsory
Semester	Fall	Semester	4
Course Language	Turkish	National Credit	4
Hours Per Week	4	ECTS	4
Course Prerequisite	N/A	Course Corequisite	N/A

Name of Lecturer	Instructor Emel Genç
Name of Assistant Lecturer	–
Presentation Date of Form	25.03.2025

Course Content

Elementary level vocabulary, grammar and four skills of English.

The Aim of Course

The aim of this course is to provide the first year students with the opportunity of getting familiar with basic English

Learning Outcomes

1. To be able to understand basic English grammar
2. To be able to grasp the meaning of basic vocabulary
3. To be able to speak, read and write in English at Elementary Level
4. To be able to introduce yourself.

Evaluation Criteria

Midterm (%20) Final (%80)

Recommended or Required Reading

Headway-Elementary (Oxford)

Course Content		
Week	Topic	Content
Week 1	Theoretical	Introduction – Auxiliary Verb to be: am, is, are
	Practical	Reading and Writing – Introducing Yourself – Filling in the Blanks with am, is, are
	Laboratory	
Week 2	Theoretical	Possessive Adjectives – my, your, his/her; Numbers
	Practical	Listening and Speaking – Alphabet Song – Filling in the Blanks with Possessive Adjectives – Writing Numbers
	Laboratory	
Week 3	Theoretical	The Verb To Be – Questions and Negative Answers
	Practical	Reading and Listening – A Letter from America – Asking Questions with the Auxiliary Verb To Be, Negatives
	Laboratory	
Week 4	Theoretical	Short Answers – Possessive Suffixes

	Practical	Answering Questions with Short Responses (Positive – Negative) – Using Possessive Suffixes Appropriately in Exercises
	Laboratory	
Week 5	Theoretical	Simple Present Tense
	Practical	Reading – Seumas McSporran: The Man with 13 Jobs – Listening and Speaking
	Laboratory	
Week 6	Theoretical	Simple Present Tense – Questions and Negative Answers
	Practical	Using do and does in Questions in Exercises. Using don't and doesn't in Negatives – Third Person Singular
	Laboratory	
Week 7	Theoretical	Simple Present Tense – Questions and Negative Answers
	Practical	
	Laboratory	
Week 8	Theoretical	Midterm Exam
	Practical	
	Laboratory	
Week 9	Theoretical	Simple Present Tense
	Practical	Speaking – What is your favorite season? Free time activities; expressions with pictures
	Laboratory	
Week 10	Theoretical	There is / There are – How many …? Prepositions of Place
	Practical	Speaking and Listening – "What are the differences between the two pictures?" Reading and Speaking – "Airplane House"
	Laboratory	
Week 11	Theoretical	Some and Any – This, That, These, Those – Directions
	Practical	Practicing some and any in exercises. Using this, that, these, and those appropriately in the exercises
	Laboratory	
Week 12	Theoretical	Can – Can't, Was – Were
	Practical	Speaking – Survey: "What can you do?" Reading and Speaking – "Super Kids" – For Job Application
	Laboratory	
Week 13	Theoretical	Could, Was Born – Homophones
	Practical	Using could for past abilities. Saying where and when you were born
	Laboratory	
Week 14	Theoretical	Revision
	Practical	Overview
	Laboratory	
Week 15	Theoretical	General review
	Practical	
	Laboratory	

Program and Learning Outcomes Relations

ÖÇ	PÇ1	PÇ2	PÇ3	PÇ4	PÇ5	PÇ6	PÇ7	PÇ8	PÇ9	PÇ10	PÇ11	PÇ12	PÇ 13	PÇ 14	PÇ 15
ÖÇ1	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-
ÖÇ2	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-
ÖÇ3	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-
ÖÇ4	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-