Course number and name	END 213 / Data Processing in Industrial Systems
Credits, contact hours, categorization of credits	3 credits / 42 hours / Engineering topic
Instructor or course coordinator	Başar ÖZTAYŞİ, Gülşah HANÇERLİOĞULLARI KÖKSALMIŞ
Text book and other supplemental materials	• Jeff Hoffer, Ramesh Venkataraman 2016, *Modern Database Management*. • Andy Oppel 2009, *A Begginer's Guide to Data Modeling*. • Ulrich-Fuller, Laurie, 2017, *Access 2016 for Dummies*.

Course information	
Content	To understand the information systems in businesses. To analyze the information systems in businesses. To gain the fundamental qualifications to design information systems in businesses.
Prerequisites	None
Type	Required

Course learning outcomes
Students who pass the course will:

I. Understand the structure of the management information systems.
II. Use MS Access database management software.
III. Gain the ability of designing the management information systems.
IV. Comprehend the main points when selecting an ERP or CRM for a company.

Student outcomes	Level of contribution
SO1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	Partial
SO2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	Partial
SO3. An ability to communicate effectively with a range of audiences.	Little
SO4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.	Not applicable
SO5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.	Not applicable
SO6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	High
SO7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	Little

Week	Topics	Learning outcome(s)
1	Basic terminology, data management and data management context.	I
2	Information systems in industrial systems, data sources, history of data bases and modern database systems.	I
3	Introduction to data modelling in industrial systems	I, III
4	Conceptual and logical data modelling	III
5	Introduction to physical data modelling	III
6	Components of physical database design: data types, constraints, stored procedures and triggers.	II
7	Introduction to SQL	II
8	Creating views by joining tables in SQL	II
9	Types of reports and introduction to reporting	II
10	Introduction to data warehouse and sample industrial reports	I
11	Introduction to big data and new database types.	I, III
12	NoSQL databases with applications	IV, VI
13	Introduction to data analytics and industrial applications	I, III, IV
14	Industrial applications of big data analytics	II, III