Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
IND368	Data Science for Engineers	5	3	0	0	3	4

Prerequisites	ING136,ING242
Admission Requirements	ING136,ING242

Language of Instruction	French
Course Type	Compulsory
Course Level	Bachelor Degree
Objective	The aim of this course is to teach industrial engineering students the fundamentals of data science, introduce methods for analyzing large datasets, and equip them with the skills to use data science methods in industrial applications.
Content	Week 1 – Introduction to Data Science: Definitions and Applications Week 2 – Data Mining and Preprocessing Techniques Week 3 – Statistical Data Analysis Week 4 – Fundamentals of Machine Learning Week 5 – Classification Models Week 6 – Regression Analysis and Prediction Models Week 7 – Clustering and Association Rules Week 8 – Time Series Analysis Week 9 – Midterm Exam Week 10 – Fundamentals and Applications of Deep Learning Week 11 – Natural Language Processing and Text Mining Week 12 – Recommendation Systems and Applications Week 13 – Big Data Technologies and Applications Week 14 – Case Studies of Data Science in Industrial Applications
References	1. "Data Science for Business" - Foster Provost & Tom Fawcett 2. "Python for Data Analysis" - Wes McKinney 3. "Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow" - Aurélien Géron 4. "The Art of Data Science" - Roger D. Peng & Elizabeth Matsui

Theory Topics

Week	Weekly Contents
1	Introduction to Data Science: Definitions and Applications
2	Data Mining and Preprocessing Techniques
3	Statistical Data Analysis
4	Fundamentals of Machine Learning
5	Classification Models
6	Regression Analysis and Prediction Models
7	Clustering and Association Rules
8	Midterm Exam
9	Time Series Analysis
10	Fundamentals and Applications of Deep Learning
11	Natural Language Processing and Text Mining
12	Recommendation Systems and Applications
13	Big Data Technologies and Applications
14	Case Studies of Data Science in Industrial Applications