Syllabus

Data Science - 55866

Last update 20-09-2023

HU Credits: 3

Responsible Department: *Business Administration*

Academic year: *0*

Semester: *2nd Semester*

Teaching Languages: *Hebrew*

Campus: *Mt. Scopus*

Course/Module Coordinator: *Dr. Lev Muchnik*

Coordinator Email: lev.muchnik@huji.ac.il

Coordinator Office Hours:

Teaching Staff:
Dr. ZVI BENAMI

Course/Module description:
Multiple sources of business and social data, as well as the technical abilities to

store and analyze them, created new possibilities for understanding the world surrounding us, and particularly, the ability to infer valuable business decisions. This tendency brought up an exponential demand in the labor market for skilled people that can process and analyze such data. A growing number of companies utilize data analysis and machine learning to make their activities more efficient or for developing new products.

The course Data Science focuses on providing theoretical understanding and practical experience in working with data, analyzing it, and drawing conclusions. Unlike Machine Learning engineers, who need mostly technical ability and deep algorithmics understanding, Data Scientists need to know how to connect business problems with the appropriate technological solutions. Within this course, we will focus on the Data Driven Decision (DDD) Making process and on matching different models and business problems.

The course will start with building the principles of data science. These principles are also relevant for more complex models, such as deep learning models. This will follow the main steps taken in such endeavors that include gathering the data, preprocessing, and analyzing the data, building appropriate machine learning models and, finally, evaluating models performances.

The course requires prior knowledge in Python and will include practical exercises.

Course/Module aims:
The objective of the course is to provide students with knowledge and practical tools for machine learning as well as to get them acquainted with various models for solving business problems, such as regression, classification, and clustering. The course is also meant to prepare students for the Machine Learning Course, in which they will also become familiar with the deep learning discipline.

Learning outcomes - On successful completion of this module, students should be able to:
At the end of the course, students will be able to gather data from various sources, process the data and conduct feature engineering, choose the appropriate model for a given business problem, compare between different models and present business insights from the raw data.

Attendance requirements(%):
80

Teaching arrangement and method of instruction: Frontal lectures

Course/Module Content:
Data Science Principles

Working with data 🞂 data sources and data formats
Feature engineering
Regression models
Classification models
Model evaluation and overfitting
Clustering
Working with unstructured data
Data reduction
Machine learning research

<u>*Required Reading:*</u>
References to relevant material will be given throughout the course.

<u>*Additional Reading Material:*</u>

Grading Scheme:
Essay / Project / Final Assignment / Home Exam / Referat 50 %
Presentation / Poster Presentation / Lecture/ Seminar / Pro-seminar / Research proposal 10 %
Active Participation / Team Assignment 10 %
Submission assignments during the semester: Exercises / Essays / Audits / Reports / Forum / Simulation / others 30 %

<u>*Additional information:*</u>
Part of the assignments will be handed out in couples.
The final assignment will be handed out in groups.