UNIVERSITY of NICOSIA

Course Syllabus

Course Code	Course Title	ECTS Credits
COMP-551DL	Business Intelligence	10
Prerequisites	**Department**	**Semester**
COMP-544DL Machine Learning	Computer Science	Fall
Type of Course	**Field**	**Language of Instruction**
Elective	Data Science	English
Level of Course	**Lecturer(s)**	**Year of Study**
2nd Cycle	Dr. Eirini Spyropoulou	1st
Mode of Delivery	**Work Placement**	**Corequisites**
Distance Learning	N/A	None

Course Objectives:

The main objectives of the course are to:

- Introduce the students to data analytic thinking from the business point of view.
- To provide an overview of classifier performance and methodologies in real settings.
- To give the students an understanding of the business problems where visualization of classifier performance is useful.
- To move from theoretical knowledge to practical skills.
- To explain the challenges of applying Machine Learning and Data Science techniques to real-world applications.
- Familiarize the students with probabilistic reasoning.
- Introduce the Expected Value Framework and its applications to use cases.
- To explain the main principles and applications of recommender systems.
- To introduce A/B testing
- To provide a number of hands-on exercises and tutorials on multiple business use cases (detecting transaction fraud, targeting customers with advertisements, predicting customer churn, recommending movies

Learning Outcomes:

After completion of the course students are expected to be able to:

1. Explain what is data driven decision making and what are the two types of data driven decision making.
2. Know the methodology for avoiding overfitting for different types of models
3. Know how to construct and interpret profit cumulative response and lift curves
4. Understand the scenarios where Naive Bayes classification is more useful than other classification techniques
5. Know the process of choosing the right model.
6. Do evaluation with business context.
7. Explain the process of analytical engineering
8. Use the Expected Value Framework to frame the problem to be solved in a way that is directly linked to the business decision
9. Discuss the notion of Controlled Experiment
10. Have an understanding of types of applications where A/B testing can be useful

Course Content:

1. Data Analytic Thinking
2. What is a good model
3. Visualizing Mode Performance
4. Use Case: Detecting Transaction Fraud
5. Evidence and Probabilities
6. Use Case: Targeting Customer with Advertisements
7. Use Case: Predicting Customer Churn
8. Towards analytical engineering
9. Recommender Systems
10. Use Case: Recommending Films
11. Use Case: Recommending scholarly articles to researchers
12. A/B Testing

Learning Activities and Teaching Methods:

Lectures, Demonstration of Tools, Assignments, Projects.

Assessment Methods:

Projects
Final Assessment*
* The Final Assessment can be either a Final Exam or Final Assignment(s) with Viva
Participation/Homework Assignments/Quizzes

Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Data Science for Business (what you need to know about data mining and data-analytic thinking)	F. Provost, T. Fawcett	O'Reilly	2013	978-1449361327

Recommended Textbooks / Readings:

Multiple research papers provided at each section on moodle.