IMMUNE TECHNOLOGY INSTITUTE

**COMPUTER ENTREPRENEURSHIP BACHELOR**

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| **BLOCK NAME** | **DATA SCIENCE** |
| **BLOCK CODE** | **CS-L6B2** |

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| **COURSE** | **3** |
| **LEVEL** | **6** |
| **CREDITS** | **6** |
| **CLASS HOURS** | **60** |
| **HOMEWORK** | **90** |
| **TOTAL HOURS** | **150** |

## DESCRIPTION

This block introduces the data science process and its techniques.
We face the challenge of creating a predictive model from user data to solve a customer churn problem for a (hypothetical) telephone operator. This telephone operator is worried because a lot of customers are leaving and going with its direct competitor.

## PRE-REQUISITES

Basic programming skills are needed. A good artificial intelligence base is appreciated.
**CS-L1B1, CS-L6B1**

## OBJECTIVES

The goal is for students to be familiar with the processes and techniques commonly used when doing data science.

## SKILLS TO BE DEVELOPED

**1 - The Data Science Process.**
1.1 - Understand the distinct phases of the Data Science Process and how transitions between them can be done.
**2 - Machine learning.**
2.1 - Extract, transform and load data to be used by machine learning algorithms.
2.2 - Differentiate distinct types of machine learning algorithms and be able to choose the correct one for each specific problem.
2.3 - Create predictive models from datasets and use them to perform inferences with new data.
2.4 - Evaluate a machine learning solution.
**3 - Data visualization.**
3.1 - Write code to produce visualizations that show what is happening in a way easy to understand by persons that are not data scientists.
**4 - Common use cases.**
4.1 - Solve a customer churn problem with machine learning.
4.2 - Solve a fraud detection problem with machine learning.
**5 - Data Science in Big Data environments.**
5.1 - Do Data Science work in Big Data environments.

## SYLLABUS

1 - The Data Science Process.
2 - Machine learning.
3 - Data visualization.
4 - Common use cases.
5 - Data Science in Big Data environments.

## METHODOLOGY

Resolution of practical activities supervised by the mentor. Compulsory attendance.

## DEDICATION AND EVALUATION

The student must pass the mandatory activities (challenges/projects) that are covered in the block.
Each challenge/project produces its own score and has been designed to cover certain block percentages.
Such score is 80% objective (the program that solves the challenge/project works without errors and producing the expected results) and 20% subjective (solution elegance, how clean the code is, documentation).
Block scores are finally calculated by prorating individual activities with respect to their block coverage percentages.