Introduction to the Lecture

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Version: η.SS.2025

MCI

B.Sc Data Science I

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1. Introduction

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Introduction

- The goal of this lecture is to give you a working understanding of data analysis and give you the practical mathematical knowledge for use in Data Science II.
- While some parts will be done with pen and paper we will work with python for solving some applications. The structure for this lecture is as follows.
- This lecture is a total of 2 SWS with a total of thirty (30) UE.
  - With 30 UE is devoted to lectures.

Introduction

- Lecture materials and all possible supplements will be present in its Github Repo.
  - You can easily access the link to the web-page from here.

> Github is chosen for easy access to material management and CI/CD capabilities and allowing hosting websites.

- In the lecture some exercises are solved using programming and can be accessed from the Repo website.

Introduction

- The student should be comfortable with working with python and have a good background with mathematics.

Requirements	Taught Lecture	Code	Degree	Outcome
Python Python	Programming I	PRG I	B.Sc	Probability
Linear Algebra	Mathematics I	MAT I	B.Sc	Statistics
-	-	-	-	Data Engineering
-	-	-	-	-
-	-	-	-	-

Table 1: Distribution of materials across the semester.

Introduction

Description	Value
Official Name	Machine Learning & Data Science 1
Lecture Code	MLDS
Module Code	MECH-B-4-MLDS-MLDS1-ILV
Degree	B.Sc
Lecture Name	Drive Systems
Semester	4
Season	SS
Assignments	HW 1 HW 2 HW 3
Lecturer	Daniel T. McGuiness, Ph.D
Module Responsible	BnM
Software	Python, Simulink
SWS Total	2
UE Total	0
ECTS	5

Table 2: Information regarding the lecture.

Introduction

- This part of Data Science I will be %100 assignments based as there will be three assignments where you need to solve given questions using python programming language.

Assignment Type	Value
HW 1	30
HW 2	30
HW 3	40
SUM	100

Table 3: Distribution of materials across the semester.

Title
Probability: A Graduate Course
Partial Differential Equations - An Introduction
Probability and Statistics for Engineers & Scientists
Differential Equations with Applications and Historical Notes (3rd Edition)
Applied Statistics and Probability for Engineers (3rd Edition)

Table 4: Lecture sources which can be useful during the course of the lecture. For more information on sources, please consult the repo.

- The content and unit distribution of the lecture is as follows where a unit is defined as 45 min lecture.

Topic	Units	Self Study
Theory of Probability - I	4	8
Theory of Probability - II	2	4
Statistics - I	4	8
Statistics - II	2	4
Data Cleaning - I	4	8
Data Cleaning - II	2	4
Classification - I	2	4
Classification - II	4	8
Regression - I	4	8
Regression - II	2	4
Sum	30	60

Table 5: Distribution of materials across the semester.