Curriculum – Program Overview and Credits

	Semester Hours	ECTS Credits	Total in the block
UE-MSD01– Machine Learning			
Machine Learning for Data Science	30	3.5	
Deep Learning	15	1.5	**7**
Dimension Reduction & Matrix Completion	18	2	
UE–MSD02 – Models for Dependent Data			
Machine Learning for Time Series	18	2	**5**
High-dimensional Time Series	24	3	
UE–MSD03 – Statistics for New Data			
Functional Data Analysis	24	3	**5**
Machine Learning for Natural Language Processing (NLP)	18	2	
UE–MSD04 – Advanced Tools for Data Analysis & Computing			
Data Visualization	15	1	**3**
Parallel Computing with R & Python	18	2	
UE-MSD05 – IT Tools			
IT Tools 1 (Hadoop & Cloud Computing)	18	2	**5**
IT Tools 2 (NoSQL, Big Data Processing with Spark)	24	3	
UE–MSD06 – Case Studies and Project			
Smart Data Project / or Research Project	24	2.5	**5**
Topics, Case Studies, Conferences / or Research Project	24	2.5	
TOTAL Semester 1	**270 H**	**30 credits**	
UE-MSD07- Internship End-of-Studies Internship	(4 to 6 months)		**30**
TOTAL Semester 2		**30 credits**	
TOTAL Academic Year	**270 H**	**60 credits**	

Prior to the start of the first semester, the students attend mandatory courses designed to reinforce different topics in Computer Science, Statistics, and Mathematics. The tentative list of these courses for September 2023 is the following.

GNU Linux & Shell Scripting	12 hrs
Multivariate Data Exploration	12 hrs
SQL	06 hrs
Statistical Language: Python	09 hrs
Statistical Language: R	09 hrs
Topics in probability: Markov Chains	12 hrs