Curriculum – Program Overview and Credits

	Semester Hours	ECTS Credits	Total in the block
UE-MSD01– Machine Learning			
Machine Learning for Data Science	30	4	
Deep Learning	15	1	**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	18	2	**5**
Graphical Models & Latent Structures	24	3	
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)	21	2.5	**5**
IT Tools 2 (NoSQL, Big Data Processing with Spark)	21	2.5	
UE–MSD06 – Case Studies and Project			
Smart Data Project (external supervisors: companies..) / 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 will be given the opportunity to attend courses designed to reinforce different topics in Computer Science, Statistics, and Mathematics. The tentative list of these courses for September 2022 is the following.

Statistical Languages – R, Python	18 h
Multivariate Data Exploration	12 h
Markov Chains	12 h
GNU Linux & Shell Scripting	12 h