

SEMESTER 1

	Semester Hours	ECTS Credits	Total in the block
Statistics Track			
UE - Advanced Topics in Probability and Statistics			
Probability, Algebra, and Analysis	15	2	5
Statistical Inference and Hypothesis Testing	15	2	
Simulation and Monte Carlo Integration Methods	10	1	
UE - Advanced Topics in Data Analysis			
Regression Models	15	2	6
Multivariate Exploratory Data Analysis (Factorial Analysis - Clustering)	15	2	
Basic Sampling Theory	15	2	
TOTAL Statistics Track	85h		11 credits

OR

	Semester Hours	ECTS Credits	Total in the block
Computer Science Track			
UE - Advanced Computer Science			
Client - Server Architecture, JavaEE	25	3	6
Cloud Computing	10	1	
JavaEE Project	10	2	
UE - Computer Networks			
Computer Networks	40	5	5
TOTAL Computer Science Track	85h		11 credits

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	Semester Hours	ECTS Credits	Total in the block
Common Courses			
UE - Data Mining and Statistical Learning			
Aggregation Methods in Statistics and Combinatorial Complexity	20	2	4
Association Rules Mining	10	1	
Data Visualization	10	1	
UE - Databases			
Olap, Multidimensional Databases	15	1.5	4
"Big Data" Databases	15	1.5	
NoSQL	10	1	
UE – High-Dimensional Statistics			
Penalized Regression	25	2.5	4
Variable Selection Methods	15	1.5	
UE - Operating Systems			
Unix (shell script)	20	2	4
Parallelized Systems	20	2	
(UE - French as a Foreign Language)*			
(French Summer Program [July-August at CIREFE])	(intensive)	(6)	(8)
(Courses for foreigners: Written/Oral French language S1 [at CIREFE])	(22)	(2)	
TOTAL Common Courses	160h		16 credits

* For foreign students, as needed.

TOTAL Semester 1

245h

27 credits

SEMESTER 2

	Semester Hours	ECTS Credits	Total in the block
Common Courses (January - April)			
UE - Complex Data Modeling			
Functional Data Analysis	25	2.5	4
Text Mining, Image Analysis	15	1.5	
UE – Efficient Sampling and Parsimonious Representations			
Compressive Sensing	20	2	4
Parsimonious Representations	20	2	
UE – Computer Science for Big Data			
Foundations of Big Data using MapReduce	20	2	4
Hadoop Technologies (batch/real time processing), Storm, HD File System	20	2	
UE - Statistical Software			
Programming with Big Data in R using Distributed Memory	20	2	4
Statistical Libraries for Big Data (Mahout, SAS, HPA)	20	2	
UE - IT Security			
Secure Pairing, Security Services against Piracy, Cryptography	30	3	4
Privacy	10	1	
UE - Big Data Project			
Big Data Project	40	4	4
(UE - French as a Foreign Language)*			
(Courses for foreigners: Written/Oral French language S2 [at CIREFE])	(22)	(2)	(2)
TOTAL Common Courses	240h		24 credits

* For foreign students, as needed.

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	Semester Hours	ECTS Credits	Total in the block
Internship (May - September)			
UE - Internship			
End-of-Studies Internship (5 months)	N/A	25	25

TOTAL Semester 2

240h

49 credits

Note: In order to permanently ensure that the curriculum is adapted for the needs of the current job market, ENSAI reserves the right to make slight changes to the proposed curriculum and the descriptions between the period of admission and the start of the academic year.