PhD in STATISTICS AND MACHINE LEARNING

CYCLE 43rd - COHORT 2027-2028
Please note that the study plan might be subject to minor changes.
Lessons start in early September.
The program requires full-time commitment with compulsory attendance.

First year - a.y. 2027-28

12 compulsory courses
+ Research Ethics course (self-managed online course)
+ Statistics Seminars and BIDSA Seminars

SEM.	COURSE TITLE	HOURS
1	MEASURE-THEORETIC FOUNDATIONS FOR LEARNING	28
1	PRINCIPLES OF STATISTICAL INFERENCE AND LEARNING	24
1	PROBABILITY THEORY: FOUNDATIONS	28
1	MULTIVARIATE STATISTICS AND UNSUPERVISED LEARNING	24
1	BAYESIAN INFERENCE: THEORY AND COMPUTATION	24
1	PROBABILITY THEORY: ADVANCED TOPICS	24
2	STATISTICAL OPTIMAL TRANSPORT	24
2	NONPARAMETRIC INFERENCE	24
2	STOCHASTIC PROCESSES: DISCRETE-TIME MODELS	24
2	BAYESIAN METHODS FOR STRUCTURED DATA	24
2	STATISTICAL MACHINE LEARNING	24
2	STOCHASTIC PROCESSES: CONTINUOUS-TIME MODELS	24

Requirements to pass to the next year
Exam for each course.

Second year - a.y. 2028-29

Summer School (end of 1st year)
9 compulsory courses + 1 reading group

SEM.	COURSE TITLE	HOURS
1	BAYESIAN NONPARAMETRICS	30
1	COMPUTATIONAL METHODS FOR STATISTICS AND MACHINE LEARNING	24
1	EXTREME VALUE THEORY AND RISK MODELING	24
1	SAMPLING, OPTIMIZATION AND GENERATIVE MODELS	24
1	HIGH-DIMENSIONAL STATISTICS AND LEARNING THEORY	24
1	RANDOM GRAPHS AND NETWORK MODELS	24
2	BIOSTATISTICS: MODELS AND INFERENCE	24
2	CAUSAL INFERENCE	24
2	SPECIAL TOPICS IN STATISTICS AND MACHINE LEARNING	14
2	READING GROUP ON ADVANCED RESEARCH TOPICS	24

Requirements to pass to the next year
Exam for each course.
Research and thesis project.

Third and Fourth year - a.y. 2029-30 and 2030-31

- Study/research period at other Universities (optional);
- Teaching/Teaching Assistantship/Research Assistantship activities (optional);
- conferences (as a listener and as a speaker);
- Statistics Seminars and BIDSA Seminars;
- submission of mid-term doctoral thesis (at the end of 3rd year);
- thesis submission to external reviewers (at end of 4th year);
- thesis defense.