## Studies Plan

### Data Science 2019-20

#### Master project

<table>
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<tr>
<th>Courses</th>
<th>Language Code</th>
<th>Section</th>
<th>Master 1</th>
<th>Master 2</th>
<th>MP Autumn</th>
<th>MP Spring</th>
<th>Exam Session</th>
<th>Exam</th>
<th>Credit</th>
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<td>Engineering internship credited with Master project (master in Data sciences)</td>
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<td>COM-596</td>
<td>SC</td>
<td>Prof divers</td>
<td>320h</td>
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<td>COM-598</td>
<td>SC</td>
<td>Prof divers</td>
<td>900h</td>
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### Group 1

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<th>Exam Session</th>
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<tbody>
<tr>
<td>Advanced algorithms</td>
<td>E</td>
<td>CS-450</td>
<td>IN</td>
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<td>4h</td>
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<tr>
<td>Applied data analysis</td>
<td>E</td>
<td>CS-401</td>
<td>SC</td>
<td>West</td>
<td>2h</td>
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<td>Win</td>
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<td>Information security and privacy</td>
<td>E</td>
<td>COM-402</td>
<td>IN</td>
<td>González Troncoso Hubaux Oechslin</td>
<td>3h</td>
<td>1h</td>
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<tr>
<td>Information theory and signal processing</td>
<td>E</td>
<td>COM-406</td>
<td>IN</td>
<td>Gastpar Telatar Urbanke</td>
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<tr>
<td>Machine learning</td>
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<td>CS-433</td>
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<td>Jaggi Urbanke</td>
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<td>Optimization for machine learning</td>
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<td>Statistics for data science</td>
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<td>MATH-413</td>
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<td>Systems for data science</td>
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### Group 2 : Options

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<tr>
<td>Advanced cryptography</td>
<td>E</td>
<td>COM-501</td>
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<td>Advanced probability and applications</td>
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<td>Lévêque</td>
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<tr>
<td>Advanced topics on privacy enhancing technologies</td>
<td>E</td>
<td>CS-523</td>
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<td>González Troncoso Hubaux</td>
<td>3h</td>
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<tr>
<td>A Network Tour of Data Science</td>
<td>E</td>
<td>EE-558</td>
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<td>Frossard Vanderheynst</td>
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<td>Artificial neural networks</td>
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Mathematical foundations of signal processing  
E  
COM-514  
SC  
Kolundzija  
Parhizkar  
Schlofen  
3h  
2h  
Win  
Written  
6

Mathematics of data: from theory to computation  
E  
EE-556  
EL  
Cevher  
2h  
2h  
Win  
Written  
4

Networks out of control  
E  
COM-512  
SC  
Grossglauser  
Thiran  
2h  
1h  
Sum  
Written  
4

Optional project in data science  
E  
COM-508  
SC  
Profs divers  
2h  
2h  
Sum  
Win  
During the semester  
8

Performance evaluation  
E  
COM-503  
SC  
3h  
1h  
2h  
Sum  
Written  
7

Risk, rare events and extremes  
E  
MATH-447  
MA  
Davison  
2h  
2h  
Win  
Written  
5

Robust and nonparametric statistics  
E  
MATH-441  
MA  
Morgenthaler  
2h  
2h  
Sum  
Oral  
5

Software security  
E  
CS-412  
IN  
Payer  
3h  
2h  
1h  
Sum  
During the semester  
6

Statistical theory  
E  
MATH-442  
MA  
Koch  
2h  
2h  
Win  
Written  
5

Student seminar: security protocols and applications  
E  
COM-506  
SC  
Oechslin  
Vaudenay  
2h  
Sum  
Written  
3

Technology ventures in IC  
E  
CS-410  
IN  
2h  
2h  
Sum  
During the semester  
4

Time series  
E  
MATH-342  
MA  
Olhede  
2h  
2h  
Sum  
Written  
5

Topics in theoretical computer science  
E  
CS-455  
IN  
Kapralov  
3h  
1h  
Sum  
Win  
During the semester  
4

Virtual reality  
E  
CS-444  
IN  
Boulic  
2h  
1h  
Sum  
During the semester  
4

Block "Projects & SHS"  

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