

# Master Data AI: Welcome and Introduction

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# Overview

DataAI Team

Choosing and Validating Courses

Getting an M2 in Data AI

Getting an M1 in Data AI

Assistance

DataAI schedule

DataAI M1 Example Schedule

DataAI Optional Courses

How to succeed in DataAI

# The most important tools

## **If you have a question regarding Data AI**

- Go to <https://dataai.telecom-paris.fr>,
- Contact Danielle, Louis, or Goran if you can't find the answer there.

## **If you have a question regarding a course**

- Go to course webpage (synapses or moodle)!
- Ask the teacher

*In all cases, start by looking for the answer by yourself and contact us if you can't find it!*

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**Coordinator**



Goran Frehse  
**Co-coordinator**



Danielle Deloy  
**Administrator**

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# Choosing Your Courses

Try to be coherent: For M1, start with basic courses.

- Fill in the web form; saving it checks for alerts.
- Submit schedule by Tuesday, September 13 evening.

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- **DEMO**



# Validating a Course

- A 24h course = 2.5 ECTS (most Data AI courses).
- A X course = 5 ECTS (more ECTS but also more work).
- A course is validated when grade  $\geq 10$  out of 20.
- Exams can be hard.
- Failed exam can **SOMETIMES** be retaken in 2nd session.
- **DON'T CHEAT**
  - sanctions are severe,
  - plagiarizing is cheating,
  - if you're desperate, come and see us rather than cheat.

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## Getting an M2 in Data AI

- 30 ECTS in courses (12 courses), with 25 ECTS from DataAI and 5 ECTS chosen freely
- Validate the course requirements
  - at least one course from each mandatory groups (except those already taken in M1)
- Master's internship (Master's thesis) = 30 ECTS, between Feb. and Sept.

# Mandatory Course Groups

One from each group, no overlapping topics (see course descriptions).

- Group Machine Learning

Machine Learning: Shallow & Deep Learning  
Machine & Deep Learning Introduction  
Can be replaced with more advanced courses.

- Group Logics

Logics and Symbolic AI  
Logic & Knowledge representation

- Group Databases

Database management systems

Databases

- Group Big Data Systems

Systems for Big Data  
Architectures for Big Data  
Big data infrastructures

- Group Softskills

Softskills seminar

- Group Ethics

AI Ethics

## M1/M2 Internships

- Internship in a research lab (very much encouraged) or in a company (discouraged)
- DataAI will post some internship offers on the website. Télécom Paris organizes internship forums. IP Paris will organize an "internship day".
- Internship advisor supervises the student at host institution
- Scientific advisor (lecturer of the Data AI) mediates in case of disagreement between the student and the internship advisor
- Written report, oral defense, both in English
- Validated if the grade is at least 10/20.

## M1/M2 Internships – What To Do Beforehand

1. Fill out the form in the Synapses system (fill in all fields)
2. Send the internship offer by email to the DataAI coordinators for approval
3. Signal scientific advisor to DataAI administrator
4. Fill out the internship agreement (“CONVENTION DE STAGE”)
5. Print 6 (!) copies of the internship agreement and give them to DataAI administrator for signature

## M1/M2 Internships – What To Do At the End

1. Send report to scientific advisor 1 week before the defense
2. Defense: 20 minutes presentation, then questions by the advisors
  - no more than 3 weeks before and 1 month after the end of the internship; during the current year of study
  - takes place at the reference institute (Télécom Paris) or at the institute of the scientific advisor
  - attended by scientific advisor and internship advisor if possible
3. Internship is graded by the scientific advisor in coordination with the internship advisor: quality of the work, the report, and the defense

## **M1 Internships – Specifics**

- 2–3 months
- to be completed by the 15th of August
- Report 20 pages, oral defense, both in English

## **M2 Internships – Specifics**

- 5–6 months, starting between Feb. and May.
- to be completed by the 1st of October.
- Report 30-60 pages, oral defense, both in English



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# Getting an M1 in Data AI

During the M1 year, a student **can** validate:

- up to two research projects awarded 5 ECTS each
- a 2-3 months internship
- 10 ECTS outside of DATA AI courses with at most 5 ECTS in non-math/CS topics
- a certain number of DATA AI courses.

To validate the M1 year, a student **must** validate

- two research projects OR one internship and at least one research project.
- a total of 60 ECTS.

Remember to take some courses from mandatory course groups (required for M2)

# M1 Research Projects

- 2 Research projects, each  $\sim$ 10 days work scattered throughout a semester
- Requires finding an advisor & approval by Data AI team.
  - both projects can have the same adviser
  - second project approved only after first one is finished
- We will provide a list of research projects topics, but you can also propose your own.
  - re-implementing well known techniques, benchmarking different approaches, reading articles, writing code or ideas, making experiments, etc.
- Report: write a short document summarizing your contribution.
- Poster session at the end of the year
  - The poster can represent one or both projects.

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Studying in a different country, a different language, in a different culture, and a different education system can be daunting.

## **Some resources to help you**

- Psychologist of IP Paris : `sylvie-coussot@ip-paris.fr`,
- Student helpline : `vie-etudiante@ip-paris.fr`

# Sexist and Sexual Violence

## Definition

- Any sexual act, attempted sexual act, comment or advance of a sexual nature directed at a person **without their consent**.
- This violence can take various forms: sexist comments, insistent invitations, touching and caressing of a sexual nature, sexual harassment, exhibitionism, blackmail, threats, use of force which can take the form of a stolen kiss or even rape, sexist or homophobic insults.

## Legal

- French law penalises all form of sexist and sexual violence.
- This includes harassment, verbal and online.
- Intoxication, of the aggressor or of the victim, makes it a *more serious crime*.

## Ressources

- **IP Paris helpline**: `cellule.ecoute@ip-paris.fr`
- Free hotline: 3919 (also in English)
- Essonne Centre for Information on Women's' and Family Rights (CIDFF 91) : 01 60 79 42 26.
- Femmes solidarité 91 : 01 70 58 93 30.
- SOS homophobie : 01 48 06 42 41, `sos-homophobie.org`
- In case of emergency, call the police : 17

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## DataAI Basics Week, 5-9 Sept.

|                     | Monday  | Tuesday   | Wednesday                               | Thursday                          | Friday                             |
|---------------------|---|---|---|-----------------------------------|------------------------------------|
| 9:00<br>–<br>11:45  | <b>Data AI<br/>welcome<br/>meeting</b>            | <b>How to use<br/>a computer</b><br>Louis Jachiet           | TPT-SD201                               | <b>Master<br/>welcome<br/>day</b> | <b>Algorithms</b><br>Louis Jachiet |
| 13:30<br>–<br>16:45 | <b>Formal<br/>languages</b><br>Fabian<br>Suchanek | <b>Statistics<br/>and<br/>probability</b><br>Tiphaine Viard | <b>Logic</b><br>Jean-Louis<br>Dessalles | <b>Master<br/>welcome<br/>day</b> | TPT-SD202 /<br>TPT-IA301           |

### **Vacations and days off**

- 05/09 start of the year
- 11/11 day off
- 29/10 to 06/11 vacation
- 17/12 to 02/01 vacation (Monday included)
- 25/02 to 05/02 vacation
- 10/04 day off
- 29/04 to 08/05 vacation (Monday included)
- 18/05 to 21/05 vacation
- 29/05 day off

## Main schedule

- 05/09 to 18/11 Period 1
- 21/11 to 10/02 Period 2
- 13/02 to 14/04 Period 3
- 17/04 to 30/06 Period 4

## X schedule

- 19/09 to 18/12 Period 1
- 03/01 to 17/03 Period 2
- 1/02 to 14/04 Period 3

### **M2 internships**

- Starting September, select courses according to what you want to do
- In November or December, start contacting people
- End of February, start of the internship
- End of April, very last date to start your internship

### **PhD**

There are different ways of financing your PhD but you should discuss the PhD topic *before starting* the internship! And it is strongly advised to do your internship where you would like to do your PhD.

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## Example M1 Schedule, Period 1

|    | Monday                                   | Tuesday | Wednesday                                | Thursday  | Friday                                 |
|----|--|---------|--|---|--|
| AM |  |         | TPT-SD201<br>Mining of Large<br>Datasets |   | X-INF552<br>Data<br>Visualization      |
| PM | X-INF554<br>Machine and<br>Deep Learning |         |  | TPT-DATAAI-<br>964<br>Knowledge<br>Base<br>Construction | TPT-IA301<br>Logics and<br>Symbolic AI |

## Example M1 Schedule, Period 2

|    | Monday  | Tuesday                                | Wednesday | Thursday   | Friday   |
|----|---|--|-----------|--|--|
| AM | TPT-IA307<br>Programming<br>with GPU for<br>Deep Learning | TPT-IA318<br>Reinforcement<br>Learning |           | TPT-IA317<br>Machine<br>Learning in<br>High<br>Dimension       | X-INF552<br>Data<br>Visualization  |
| PM | X-INF554<br>Machine and<br>Deep Learning                  |  |           | TPT-<br>DATAAI961<br>Self-Organising<br>Multi-Agent<br>Systems | TPT-IA304<br>Probabilistic<br>Models and<br>Machine<br>Learning +<br>TPT-IA307 |

## Example M1 Schedule, Period 3

|    | Monday  | Tuesday  | Wednesday                                     | Thursday | Friday |
|----|---|--|---|----------|--------|
| AM | TPT-IA312<br>Machine Learning for Text Mining | TPT-DATAAI962<br>Data Stream Mining                      | TPT-SD206<br>Logic & Knowledge representation |          |        |
| PM | TPT-IA312                                     | TPT-DATAAI965<br>Basics of image processing and analysis |   |          |        |



## Example M1 Schedule, Period 4

Internship, french classes, other classes, projects and/or

|    | Monday | Tuesday                 | Wednesday                                    | Thursday | Friday                    |
|----|--------|-------------------------|--|----------|---------------------------|
| AM |        | TPT-SD202D<br>Databases | TPT-SD213<br>Cognitive<br>approach to<br>NLP |          |                           |
| PM |        |                         |  |          | TPT-SD212<br>Graph Mining |

You can fill your free-CS ECTS from CS courses at IP Paris. Some examples that you can find in Synapses of **Télécom** (confirm with teacher whether they are in English):

- 2A Track "Traitement du signal pour l'intelligence" (TSIA)
  - SD-TSIA204 : Statistics: linear models
  - SD-TSIA205 : Advanced Statistics
  - SD-TSIA210 : Machine Learning
  - SD-TSIA211 : Optimization for Machine Learning
  - SD-TSIA214 : Machine Learning for Text Mining

You can fill your free-CS ECTS from CS courses at IP Paris. Some examples that you can find in Synapses of **Télécom** (confirm with teacher whether they are in English):

- INF280 : Programming contest training
- DS-telecom-14 - Introduction to Deep Learning with Python part 1
- DS-telecom-21 - Introduction to Deep Learning with Python part 2

You can fill your free-CS ECTS from CS courses at IP Paris. Some examples that you can find in Moodle of **Polytechnique** (confirm with teacher whether they are in English):

- INF634 - Computer Vision
- X-INF643 : Soft Robots : Stimulation, Fabrication and Control
- X-MAP/INF641 : Reinforcement Learning (math-heavy)

## Free-non-CS ECTS

You can fill your free-non-CS ECTS from courses at IP Paris that are not related to CS. Some examples that you can find in Synapses of **Télécom** (confirm with teacher whether they are in English):

- MODS214 : Economics
- SES204 : Internet and Society
- for more, go to "Catalogue 2022-2023", then in the menu on the left select "Anglais" under "Langue d'enseignement" (93 courses)
- language courses (FEL)

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Probabilistic Models and Machine Learning (TSP-IA304)

Machine Learning in High Dimension (TPT-IA317)

Kernel Machines (TPT-IA326)

Advanced Machine Learning and Autonomous Agents (X-INF581-1)

Recent Trends in Deep Learning (TPT-DATAAI902)

Programming with GPU for Deep Learning (TPT-IA307)

Graph Mining (TPT-SD212)

Graph mining and Clustering (TPT-MITRO209)

Data Stream Mining (TPT-DATAAI962)

Mining of Large Datasets (TPT-SD201)

Image mining and content-based retrieval (TPT-AIC-DK921)

Topological Data Analysis (X-INF556)



Knowledge Base Construction (TPT-DATAA1964)

Semantic Networks (CSC5003-2)

Efficient resolution of logical models (ENSTA-IA303)

Constraint programming (ENSTA-IA302)

Machine Learning for Text Mining (TPT-IA312)

Text Mining and NLP (X-INF582)

Cognitive approach to NLP (TPT-SD-213)

Multimodal Dialogue (TPT-IA315)

Self-Organising Multi-Agent Systems (TPT-DATAAI961)

Navigation for autonomous systems (TPT-DATAAI963)

Learning for robotics (ENSTA - IA305)

Reinforcement Learning (TPT-IA318)

Emergence in Complex Systems (TPT-AthensTPT-09)

Basics of image processing and analysis (TPT-DATAAI965)

Algorithmic information and artificial intelligence (TPT-IA703)

Data Visualization (X-INF552)

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## Be adults

- Organize yourself, *e.g.* use a calendar for courses and assignments
- Work regularly, *i.e.* go over the courses when at home
- Don't wait the deadline to submit assignments

# How to navigate Data AI

## **Be adults**

- Organize yourself, *e.g.* use a calendar for courses and assignments
- Work regularly, *i.e.* go over the courses when at home
- Don't wait the deadline to submit assignments

## **but don't forget to be humans**

- Create social connections, *e.g.* participate in students activities
- Enjoy the life on the plateau, *e.g.* hiking, trip to Paris, etc.
- Maintain good health habits (sleep, exercise, etc.)