

Second Year in Computer Science at ENS Cachan

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Sept. 5, 2016

- Year of diversification and broadening
 - courses from MPRI M1
 - external courses from other Masters (Paris 7, Paris 6, etc.)
- Curriculum consists of
 - à la carte choice of courses (mostly during the first semester)
 - internship (second semester)
- Lab visits; *at least one visit for each student*

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 - courses from MPRI M1
 - external courses from other Masters (Paris 7, Paris 6, etc.)
 - ... by contrast, M2 will be a time for specialisation
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Two Possibilities

Need to choose rapidly between:

Long internship

- first semester in Cachan
(30 ECTS, min. 18 ETCS from MPRI M1 and 24 ETCS in Computer Science)
- approx. $4\frac{1}{2}$ months internship abroad

Short internship

- two semesters in Cachan
(45 ECTS, min. 24 ETCS from MPRI M1 and 30 ETCS in Computer Science)
- approx. $2\frac{1}{4}$ months internship abroad
- aim: strengthen knowledge in fundamentals or in another discipline like mathematics

Internships

- **abroad** (except for international students)

- long internships (30 ETCS)
 - duration:** 4 to 5 months between Feb. and Aug. 2017
 - search:** Nov.–Dec. 2016 with your tutor

- short internships (15 ETCS)
 - duration:** 2 to $2\frac{1}{2}$ months between Jun. and Aug. 2017
 - search:** Jan.–Feb. 2016 with your tutor

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- smaller duration internships have to be prepared in advance (bibliographic work etc.)

For instance, searching for a long internship. . .

Oct. 15–31 Soul-searching with your tutor:

- 1 research topic
- 2 geographical preferences

Nov. 1–15 Identify potential supervisors

Nov. 15–30 Initial agreement from supervisors

Dec. 1–Jan. 15 Finalise research project, dates, practical issues
(accommodation, office space, etc.)

Jan. 15–30 Internship contract, travel booking, etc.

Courses à la carte

MPRI M1 courses start on Sept. 12, 2016
(min. 18 ECTS if long internship and 24 ECTS if short
internship)

external courses

- your choices have to be on the pedagogical server by Sep. 23, 2016
(https://admin.dptinfo.ens-cachan.fr/serveur_pedagogique/)

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MPRI M1 Courses

<https://wikimpri.dptinfo.ens-cachan.fr/doku.php?id=cours:cours1>

<http://www.dptinfo.ens-cachan.fr/M1/edts1-1617.php>

- Initiation to research (Cachan, **mandatory**, 3 ECTS)
- **Lambda-calculi and categories** (Ulm, 6 ECTS)
- **Advanced complexity** (Cachan, 6 ECTS)
- **Rewriting techniques** (Cachan, 3 ECTS)
- **Tree automata and applications** (Cachan, 3 ECTS)
- **Basics of verification** (Cachan, 6 ECTS)
- **Algorithmics and bioinformatics** (Cachan, 3 ECTS)
- **Probabilistic aspects of computer science** (Cachan, 6 ECTS)
- **Statistical machine learning** (Ulm, 6 ECTS)
- **Convex optimization** (Ulm, 6 ECTS)
- **Robot motion planning** (Ulm, 6 ECTS)
- **Networks** (Cachan, 3 ECTS)
- **Software engineering** (Cachan, 6 ECTS)

Examples of external courses

all the external courses must be approved by the department

- Master of applied mathematics, *Jacques Hadamard* track
(<http://www.fondation-hadamard.fr/fr/master-master-1/voie-jacques-hadamard>)
 - e.g., Functional analysis
- Master of mathematics, U. Paris 7
(<http://www.math.univ-paris-diderot.fr/formations/masters/math/>)
 - foundations of mathematics (MF)
 - statistics, probabilities and finance (M2MO)
 - mathematical logic and foundations of computer science (LMFI)
- Master of computer science, U. Paris 7 (<http://www.informatique.univ-paris-diderot.fr/wiki/doku.php?id=enseignement:master1>)
- Master of computer science, U. Paris 6
(<http://www-master.ufr-info-p6.jussieu.fr/lmd/>)
- Master of computer science, U. Paris 11
(<http://www.u-psud.fr/fr/formations/diplomes/masters/informatique.html>)

Examples of M2 courses

Some MPRI M2 courses can be followed (after validation with the department), e.g.

- Foundations of proof systems (3 ECTS)
- Web data management (2nd period, 3 ECTS)
- Computational structures and logics for natural language modelling (3 ECTS)
- Graph algorithms (both periods, 3 ECTS)
- Proofs of programs (2nd period, 3 ECTS)

Avoid taking your favourite courses already in M1!

Internship defence and start of year

- internship defence in early Sep. 2017
- be back from your internship!

Then what?

Need to start thinking about next year: talk with your tutor and your teachers

ARPE research year abroad

- overseen by Thomas Chatain (chatain@lsv.fr)
- long internships: possibility to do part of the ARPE in France
- funding opportunities for unpaid students (<https://www.universite-paris-saclay.fr/fr/universite/offre-emploi/mobilite-sortante-niveau-l3-m1-m2-et-grandes-ecoles>)

M2 MPRI or another research-oriented Master

aggregation of mathematics

bachelor in another field (biology, physics, economy, etc.)

Questions?