Welcome to EPFL ....
Your next few years with EDIC ...

4~6 years

Defense
Internships
Conferences
TAing
Publish
Research
Courses (depth & breadth)
During your stay ...

- You will have an advisor/co-advisor
  - Will be with you until you graduate
  - Courses, research, career planning
  - Official annual feedback (evaluations)

- You will have a mentor
  - An EDIC program committee contact person + a “buddy” (older PhD student) for the 1st year
  - An IC faculty member beyond (from outside area)
  - Someone to talk to in general
Whilst you are here ... make sure that faculty get to know you

Why?
- Your career starts here, need reference letters!
- Most of top/well-known people you come across in the next five years are right here

How?
- Take courses, be visible
- Organize research seminars
- Excel in TAing (teaching assistance)

When it’s letter writing time, faculty will remember!
TAing (teaching assistance)
https://phd.epfl.ch/edic/requirements

- EPFL requires that all PhD students contribute to teaching
- You will
  - Be assigned by your advisor or the program admin to assist a bachelor or master course during the semester
  - Proctor and grade written exams
  - Act as an Observer for oral exams and/or Supervisor for some written exams. You will be informed of your assignments by the admin office twice a year (November / April)
- Exceptions to the rule are
  - First + last semester in the program
  - First year students having failed candidacy
Your first year with EDIC ...

<table>
<thead>
<tr>
<th>PhD Orientation (2 weeks)</th>
<th>First Year (Fellows &amp; Direct Hires)</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="https://phd.epfl.ch/edic/orientation">https://phd.epfl.ch/edic/orientation</a></td>
<td><a href="https://phd.epfl.ch/edic/requirements">https://phd.epfl.ch/edic/requirements</a></td>
</tr>
<tr>
<td>Sept. 3-14</td>
<td>Fall Semester</td>
</tr>
<tr>
<td>French classes</td>
<td>First project</td>
</tr>
<tr>
<td>Administrative tasks</td>
<td>Depth course</td>
</tr>
<tr>
<td>Research seminars</td>
<td>Potential matching*</td>
</tr>
<tr>
<td>Social events</td>
<td>Spring Semester</td>
</tr>
<tr>
<td>Matching process*</td>
<td>Second project</td>
</tr>
<tr>
<td>Sept. 18</td>
<td>Candidacy exam</td>
</tr>
<tr>
<td>Semester start</td>
<td>Definitive matching*</td>
</tr>
</tbody>
</table>

* => fellowship students

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Fellowship students – this week + next

https://phd.epfl.ch/edic/research

➢ **Contact IC faculty professors (if you haven’t already done so!)**
  – In your areas of interest
  – Make sure you have familiarized yourself with their work
  – Meet them/their group ASAP

➢ **Attend the research seminars**

➢ **When approaching faculty**
  – Make sure they have a slot to hire next year
  – Sign up for a project with them
# Research seminars (in BC 420)

Check daily at: https://phd.epfl.ch/edic/researchseminars

<table>
<thead>
<tr>
<th>Date</th>
<th>IC Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week 1</strong></td>
<td></td>
</tr>
<tr>
<td>Sept. 4 - Tuesday</td>
<td>Candea; Ford; West; Svensson</td>
</tr>
<tr>
<td>Sept. 5 - Wednesday</td>
<td>Gastpar; Urbanke; Ienne; Argyraki; Stojilovic</td>
</tr>
<tr>
<td>Sept. 6 - Thursday</td>
<td>Falsafi; Pauly; Guerraoui; Fua / Salzman</td>
</tr>
<tr>
<td><strong>Week 2</strong></td>
<td></td>
</tr>
<tr>
<td>Sept. 10 - Monday</td>
<td>Larus; Jaggi; Dillenbourg; Grossglauser; Bugnion</td>
</tr>
<tr>
<td>Sept. 11 - Tuesday</td>
<td>Koch; Payer; de Micheli / Soeken; Aberer</td>
</tr>
<tr>
<td>Sept. 12 - Wednesday</td>
<td>Ailamaki; Abbe; Hubaux; Vaudenay / Banik; Vetterli / Scholenfield / Prandoni</td>
</tr>
<tr>
<td>Sept. 13 - Thursday</td>
<td>Le Boudec; Troncoso; Kuncak; Thiran</td>
</tr>
<tr>
<td>Sept. 14 - Friday</td>
<td>Jakob; Süsstrunk; Macris; Boulic</td>
</tr>
</tbody>
</table>
What is urgent?

- **Course registration**
  [https://phd.epfl.ch/edic/courseregistration](https://phd.epfl.ch/edic/courseregistration)
  - Deadline **Sept. 26, 2018**
  - A detailed email has already been sent

- **Need at least**
  - One EDIC depth course
    [https://phd.epfl.ch/edic/courseoffering](https://phd.epfl.ch/edic/courseoffering)
  - One semester project
    [https://phd.epfl.ch/edic/projects](https://phd.epfl.ch/edic/projects)

=> Fellowship students need to find a prof./lab
**Depth and breadth courses**

- **Why?**
  - Depth: We want our students to be experts in their area
  - Breadth: We want our students to know a bit outside their research focus
EDIC depth & breadth requirements

Depth => 1\textsuperscript{st} year
- Students choose a depth area from: AI, Systems, Theory
- Requirements:
  - Must pass a depth course with a grade of 5.0
  - Must pass the candidacy exam
  - Both conditions should be met to progress
  - Do not take this lightly!

Breadth => over the course of PhD duration
- Once depth area has been chosen, other 2 areas are considered breadth
- Must pass 4 credits from each of the breadth areas
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester</th>
<th>Credits</th>
<th>2018-19</th>
<th>Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM-514</td>
<td>Mathematical foundations of signal processing</td>
<td>F</td>
<td>6</td>
<td>yes</td>
<td>Kolundzija, Parhizkar, Scholefield</td>
</tr>
<tr>
<td>CS-430</td>
<td>Intelligent Agents</td>
<td>F</td>
<td>6</td>
<td>yes</td>
<td>Faltings</td>
</tr>
<tr>
<td>CS-433</td>
<td>Machine Learning</td>
<td>F</td>
<td>7</td>
<td>yes</td>
<td>Jaggi, Urbanke</td>
</tr>
<tr>
<td>COM-417</td>
<td>Advanced probability and applications</td>
<td>S</td>
<td>6</td>
<td>yes</td>
<td>Lévêque</td>
</tr>
<tr>
<td>CS-450</td>
<td>Advanced algorithms</td>
<td>S</td>
<td>7</td>
<td>yes</td>
<td>Svensson</td>
</tr>
</tbody>
</table>

**Systems**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester</th>
<th>Credits</th>
<th>2018-19</th>
<th>Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS-472</td>
<td>Design technologies for integrated systems</td>
<td>F</td>
<td>6</td>
<td>yes</td>
<td>De Micheli</td>
</tr>
<tr>
<td>CS-522</td>
<td>Principles of computer systems</td>
<td>F</td>
<td>7</td>
<td>yes</td>
<td>Argyraki, Candea</td>
</tr>
<tr>
<td>CS-471</td>
<td>Advanced multiprocessor architecture</td>
<td>F</td>
<td>6</td>
<td>no</td>
<td>Falsafi</td>
</tr>
<tr>
<td>COM-402</td>
<td>Information security and privacy</td>
<td>S</td>
<td>6</td>
<td>yes</td>
<td>Hubaux, Oeschlin, Troncoso</td>
</tr>
<tr>
<td>COM-503</td>
<td>Performance evaluation</td>
<td>S</td>
<td>7</td>
<td>yes</td>
<td>Le Boudec</td>
</tr>
<tr>
<td>CS-422</td>
<td>Database systems</td>
<td>S</td>
<td>7</td>
<td>yes</td>
<td>Ailamaki, Karpathiotakis, Papapetrou</td>
</tr>
</tbody>
</table>

**Theory**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester</th>
<th>Credits</th>
<th>2018-19</th>
<th>Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM-401</td>
<td>Cryptography and security</td>
<td>F</td>
<td>7</td>
<td>yes</td>
<td>Vaudenay</td>
</tr>
<tr>
<td>COM-404</td>
<td>Information theory and coding</td>
<td>F</td>
<td>7</td>
<td>yes</td>
<td>Telatar</td>
</tr>
<tr>
<td>COM-514</td>
<td>Mathematical foundations of signal processing</td>
<td>F</td>
<td>6</td>
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<td>COM-417</td>
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<td>6</td>
<td>yes</td>
<td>Lévêque</td>
</tr>
<tr>
<td>CS-450</td>
<td>Advanced algorithms</td>
<td>S</td>
<td>7</td>
<td>yes</td>
<td>Svensson</td>
</tr>
</tbody>
</table>
Breadth courses

- Any 4xx or above from IC or related programs
- List online at: https://phd.epfl.ch/edic/courseoffering

AI

- COM-514 Mathematical foundations of signal processing
- CS-401 Applied data analysis
- CS-411 Digital education and learning analytics
- CS-413 Computational photography
- CS-430 Intelligent agents
- CS-431 Introduction to natural language processing
- CS-433 Machine learning
- CS-439 Optimization for machine learning
- CS-440 Advanced computer graphics
- CS-442 Computer vision
- CS-444 Virtual reality
- CS-446 Digital 3D geometry processing
- CS-456 Artificial neural networks
- CS-486 Human-computer interaction
- CS-489 Personal interaction studio
- CS-718 Topics in computational social science
- CS-720 Advances in data intelligence
- EE-511 Sensors in medical instrumentation

Systems

- COM-414 Satellite communication systems and networks
- COM-430 Modern digital communications: a hands-on approach
- COM-502 Dynamical system theory for engineers
- COM-503 Performance evaluation
- COM-506 Student seminar: security protocols and applications
- CS-410 Technology ventures in IC
- CS-420 Advanced compiler construction
- CS-422 Database systems
- CS-423 Distributed information systems
- CS-438 Decentralized systems engineering
- CS-470 Advanced computer architecture
- CS-471 Advanced multiprocessor architecture
- CS-472 Design technologies for integrated systems
- CS-473 Embedded systems
- CS-476 Real-time embedded systems
- CS-487 Industrial automation
- CS-490 Business design for IT services

Theory

- COM-417 Advanced probability and applications
- COM-421 Statistical neurosciences
- COM-500 Statistical signal and data processing through applications
- COM-501 Advanced cryptography
- COM-512 Networks out of control
- COM-514 Mathematical foundations of signal processing
- COM-516 Markov chains and algorithmic applications
- COM-611 Quantum information theory and computation
- COM-702 Advanced topics in cryptology
- COM-712 Statistical physics for communication and computer science
- CS-435 Analytic algorithms
- CS-437 Algebraic coding theory
- CS-448 Sublinear algorithms for big data analysis
- CS-450 Advanced algorithms
- CS-451 Distributed algorithms
- CS-452 Foundations of software
- CS-453 Concurrent algorithms
## EDIC graduation requirements – 30 credits in total

<table>
<thead>
<tr>
<th>Year 1 of PhD</th>
<th>External PhD Students</th>
<th>Credits</th>
<th>Internal PhD Students</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Semester project (fall)</td>
<td>6</td>
<td>Semester project (fall)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Semester project (spring)</td>
<td>6</td>
<td>Semester project (spring)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Depth Course ([x 1]^a)</td>
<td>Min. 6</td>
<td>Depth Course (a; c)</td>
<td>---</td>
</tr>
</tbody>
</table>

**Credits - 1\(^{st}\) Year** Min. 18

**Year 2 onwards**

<table>
<thead>
<tr>
<th></th>
<th>Breadth Courses ([x 2]^b)</th>
<th>Min. 8</th>
<th>Breadth Course ([x1]^b)</th>
<th>Min. 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Elective(s)</td>
<td>Min. 4</td>
<td>Electives(s)</td>
<td>Min. 10</td>
</tr>
</tbody>
</table>

**Credits - 2\(^{nd}\) Year onwards** Min. 12

**Credits - 2\(^{nd}\) Year onwards** Min. 14

### 30 Credits

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a) All PhD students are required to choose a depth area: AI, Theory, Systems. The passing grade for the depth course is 5.0 or better. Students have 2 attempts (fall and spring) to pass the depth course. A different course must be chosen. Retake of the same course is not possible.

b) The other two areas outside the depth area are defined as breadth. PhD students must obtain a minimum of 4 credits in each of the two areas.

c) EPFL MS students who have obtained a passing grade of 5.0 in a depth course prior to enrolling in the PhD program have fulfilled the depth course requirement.
Candidacy exam ... the philosophy
https://phd.epfl.ch/edic/candidacyexams

- After your 1st year of PhD you can
  - Read, understand and explain technical papers
  - Present them briefly and explain how they influence your work
  - Answer questions about the papers, your write-up and BS/MS background material in the area

- Exam focused on
  - Presentation, submitted material + basic background
  - Both depth and breadth

- What this exam is not
  - A comprehensive exam for all work in an area
  - Anything the faculty feel “you ought to know”
Candidacy exam ... evaluation criteria

https://phd.epfl.ch/edic/candidacyexams

✓ Writing skills
✓ Oral skills
✓ Depth and breadth of knowledge
✓ Ability to interpret results
✓ Critical thinking and problem solving skills

There will be a full presentation on the candidacy exam in February 2019
Annual evaluations

- **2nd year onwards**
  - Official annual evaluations
  - You and your advisor(s) fill out a form
  - Your official feedback of how you are doing

- **Mid-year evaluations if annual evaluations are**
  - Unsatisfactory or needs improvement
Annual evaluations ... Why?

- We want to know if we can help
  - Discuss concerns at the program committee level
  - Bring it up to advisor/mentor’s attention
  - Make sure you and your advisor(s) are on the same page

- We would like to know our top players
  - You will get free publicity if faculty know you
  - Other schools will know who are our best
Other things to know ...

- **Seminars**
  - https://ic.epfl.ch/events/
  - IC colloquia & seminars, SURI, ....
  - Attend, but do not burn out

- **Laptop offers and helpdesk**
  - https://poseidon.epfl.ch/
Last but not least ... you must take your vacation days!

- Five weeks legal vacation days per year
  - Be sure to take your vacation before you are transferred to a lab and enter all your days in the online tool: https://absences.epfl.ch
Any questions ... ask EDIC staff
https://phd.epfl.ch/edic - edic@epfl.ch

Cecilia Chapuis
Admissions
1st Year Students
Candidacy Exam

Madeleine Robert
General Admin
Courses
Annual Evaluations

Eileen Hazboun
Applications
Industrial Awards
Liaison with IC
School & Deanship

Your obligation: answer their emails!