Course summary
This is a problem-based course which aims to provide an introduction to the questions related to the philosophy of computation and to the use of computation for philosophical purposes. Specifically, we will address and discuss the following topics:
- basic technical problems related to computability (ex. Turing-machines, register machines, the halting problem),
- basic technical problems related to codes and cryptanalysis,
- philosophy of computation (tex. he concept of algorithm, the Church-Turing thesis),
- use of computation for philosophical purposes (ex. the computational theory of mind, the complexity of the natural language)

Objectives
These philosophical and technical problems will be discussed to provide students with the necessary means to deeply understand classical topics and contemporary discussions in the philosophy of computation. At the end of the course students will be able to exercise active control over the basic computation related problems.

An auxiliary aim of the course is to prepare the students to participate in a Workshop on Philosophy and Computation that will be hosted by the Philosophy Department during the weekend following the course. Internationally recognized researchers will present their work, and students of the Advanced Course will be strongly encouraged to attend their talks. This will allow them to familiarize themselves with the latest discussions in the field, establish a personal contact with researchers, and hence provide a great opportunity not only to write a competitive final essay, but also -- for those devoted to an academic career -- to start building a network in the academic world.

More information about the Workshop can be found here http://www.fil.lu.se/conferences/conference.asp?id=51&lang=se
The workshop and course are official events to celebrate Turing’s Centenary. More information about the celebrations can be found here www.turingcentenary.eu

http://legoofdoom.blogspot.se/
Philosophy and Computation
Advanced Course in Philosophy

Teacher: Paula Quinon
email: paula.quinon@fil.lu.se
Office: Kungshuset, room 212
Office hours: after class or by appointment
Office phone (not very useful): +46 46 222 76 42,
Mobile (for emergencies): +46 7 36 37 61 53

Contact:
For questions on the content of the course, please contact Paula Quinon (paula.quinon@fil.lu.se). To register, send an email to Ylva von Gerber (ylva.von_gerber@fil.lu.se).

Format: The course will take five days in total. There will be two sessions per day: 45 minutes lecture + 15 minutes break + 45 minutes student activity (guided discussion / text interpretation / problem solving / case study). For the precise outline, see below. One or few short papers (to be read before or during classes) will support each session. The set of papers will be sent to students via email early April. Each session will be devoted to the presentation of a topic and followed by a discussion on a proposed problem related to this topic.

The detailed bibliography will be provided later, however some warm-up reading are recommended in the course outline below.

Eligibility: The course is suitable for all students interested in philosophy of mathematics whichever their background is. The natural target groups are students of philosophy, mathematics, computer sciences and psychology (in particular interested in computational abilities or numerical cognition). We do not assume any particular background, even though a familiarity with rudimentary logic and/or general questions of ontology and epistemology would permit a deeper insight into the presented problems.

Requirements: The grades will be based on the coursework (activity in the discussions) and on the home assignment of a 3000-words essay (the subject of the essay is to be proposed by the student and approved by the teacher).

Credits: 7,5 ECTS
### Course Preliminary Outline (an update will be available at: [http://lu.academia.edu/paulaquinon/Teaching/34617/Advanced_Course_in_Philosophy_and_Computation](http://lu.academia.edu/paulaquinon/Teaching/34617/Advanced_Course_in_Philosophy_and_Computation)):

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Location</th>
<th>Activity</th>
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<tbody>
<tr>
<td><strong>Monday May 7th</strong></td>
<td>11-13</td>
<td>room 318</td>
<td>Turing’s life and work (2 hours lecture)</td>
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<td></td>
<td>15-17</td>
<td>room 318</td>
<td>Turing machine, Halting Problem, the Church-Turing Thesis</td>
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<tr>
<td><strong>Tuesday May 8th</strong></td>
<td>11-13</td>
<td>room 203</td>
<td>Physical constraints, problems of notations or encodings used in computing</td>
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<td>15-17</td>
<td>room 203</td>
<td>Turing test</td>
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<tr>
<td><strong>Wednesday May 9th</strong></td>
<td>11-13</td>
<td>room 405</td>
<td>What is an algorithm? Philosophy insight into the concept of algorithm.</td>
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<td>15-17</td>
<td>room 318</td>
<td>Philosophy of computer sciences</td>
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<td><strong>Thursday May 10th</strong></td>
<td>11-13</td>
<td>room 318</td>
<td>Computational constraints on human understanding</td>
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<td></td>
<td>15-17</td>
<td>room 318</td>
<td>Computational complexity used in philosophy</td>
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A nice and easy to understand presentation of those problems can be found in: Epstein, Carnielli, “Computability”, and a more technical introduction in Boolos, Burgess, Jeffrey “Computability and Logic”.

Read: Searl’s “Minds, Brains and Programs”

2 hours session will be devoted to the study the philosophical issues that arise from reflection upon the nature and practice of the academic discipline of computer science. The course will consists of presentation of the paper of Raymond Turner, "Philosophy of Computer Science", in: Stanford Encyclopedia of Philosophy

The discussion will be guided by the student's interest.

Raymond Turner, Philosophy of computer sciences, Stanford Encyclopedia of Philosophy
**Friday May 11th**  
11-13 (room 405)  
The computational theory of mind  
The Computational Theory of Mind entry from Stanford Encyclopedia of Philosophy by Steven Horst would be a good starting point. Readings from Putnam, Fodor, Pylyshyn, Searl, Penrose will be proposed later or during the class.

15-17 (room 318)  
Criticism of the computational theory of mind

**Saturday-Sunday**  
Workshop in Philosophy and Computation (for more information see the workshop’s website: [http://www.fil.lu.se/conferences/conference.asp?id=51&lang=se](http://www.fil.lu.se/conferences/conference.asp?id=51&lang=se))