Learning Theories and Experiments, Thursday, 14.00 – 18.00, Room 01.030
Prof. Christoph Brunner and Dr. Peter Dürsch

Prerequisites
You must be enrolled in a master or Ph.D program and have some knowledge of game theory.

Description
The first half of this course will consist of a combination of lectures and tutorials. We will introduce various equilibrium concepts that are not refinements of the Nash equilibrium. A discussion of some of the most popular non-equilibrium concepts follows. The main part of the lecture will be devoted to presenting and comparing four popular learning theories. More specifically, we will cover the following topics:

- Bayes rule, information cascades
- Equilibrium concepts (QRE, impulse balance equilibrium, payoff sampling equilibrium, action sampling equilibrium)
- Non-equilibrium concepts (level-k, Cognitive Hierarchy)
- Fictitious play
- Reinforcement learning
- Experienced weighted attraction learning
- Imitation learning

In the tutorials, you will use the computer program R to estimate the models we discuss in the lecture part.

The second half of this course is a seminar. You will be expected to come up with ideas for a research project during the first half of the course. We will discuss these ideas and you will then independently work on your project. You will present your findings to the class at the end of the semester.

Grading and Requirements
There will be a written exam covering the material of the first half of the course on June 14, 2012. You will also have to turn in homework assignments. For the second part of the course, you will have to conduct an independent project, summarize your findings in a short paper and present them to the class.

Language of Instruction
This course will be taught in English.

Literature
Fudenberg, D. and Levine, D. (1998) The Theory of Learning in Games, Cambridge: MIT Press.