

# PhD Course: Simulation Modeling in Management Research

Spring 2024

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## Course Description:

The main goal of this course is to familiarize students with simulation modeling as a research method. Some of the most influential papers in strategy and organization research (e.g. March 1991, Levinthal 1997) are (simulation) modeling papers. Theoretically, this course builds on the Micro-OT PhD course: most modeling papers are theoretically grounded in the behavioral theory of the firm (Cyert and March 1963) and focus on questions of search and learning. You will learn how to implement your own first simulation model and run experiments with it.

## Class Structure, Course Requirements, and Class Preparation:

In this class, we will not focus entirely on reading and discussing papers. Instead, it will be a very hands-on course - we will implement a simple agent based simulation model. Most existing modeling efforts in strategy and organization research are very simple models (and there is a reason for that!). For example, the n-armed bandit can be implemented in less than ten lines of code. In other words, everybody should be able to easily implement these models. The real challenge is not the coding; setting up the experiments, analyzing, and understanding these models, this is the real challenge. I am using Matlab to implement simulation models and if you also use it, I can give you some technical support.

## Deliverables: Presentation

Each participant is supposed to implement his/her own simulation model and report his/her results in a final presentation (report).

## Summary Schedule

In the first session, we will discuss the schedule etc, whether there are any conflicts with your other obligations.

<b>Date</b>	<b>Topic</b>	<b>Deliverables</b>
Session 1	Introduction into Simulation Modeling and MatLab	Be prepared to briefly discuss your research interests.
Session 2	(Individual) Learning Processes: The n-armed bandit model	will be announced in class
Session 3	Modeling and Formalizing	
Session 4	Experiments and Analysis	
Session 5	Final PPT	PPT/Report

Grading:

	<b>Assignment</b>	<b>Weight</b>
1	Class Participation	30%
2	Presentation/Final Report	70%
		100%

Readings:

Session 1: Introduction

- Davis, Jason P., Kathleen M. Eisenhardt, and Christopher B. Bingham. "Developing theory through simulation methods." *Academy of Management Review* 32.2 (2007): 480-499.
- <https://iosband.github.io/2015/07/19/Efficient-experimentation-and-multi-armed-bandits.html>
- Chapters 2.1-.,5:  
<https://web.stanford.edu/class/psych209/Readings/SuttonBartoIPRLBook2ndEd.pdf>

Session 2-5: Will be announced in class.