



Call 2019

Summer School on Computational Methods and Agent Based Modelling in Economics

Organised as part of

Advances in Economic Dynamics and Development: Economics and Complexity

Sixth Edition - 2019

Dec 02th to 06th, 2019

Curitiba – Brazil

**Extended deadline
30-October 2019.**

Organised by



Nucleo of Economics & Complexity



UNIVERSITY OF SUSSEX

BUSINESS SCHOOL

SCIENCE POLICY RESEARCH UNIT



This project has received funding from the British Academy by Newton Advanced Fellowship RD3 2017 under the grant agreement NAF2R2/100097 and INET-Young Scholars Initiative.



Aims and Objectives

Agent-based simulation models are becoming an essential tool in economics and other social sciences to study complex systems at different levels of aggregation.

Along with these opportunities come the challenges related to programming, abiding to a robust protocol and properly communicating the model and results.

This course will provide students with the necessary skills to design, implement, and analyze robust agent based models.

This week-long full-time intensive course will provide PhD students and young researchers with the technical and methodological skills required to successfully develop and analyze simulation models in a research project, such as a PhD or a paper.

What you will learn

The course will alternate lectures, exercises carried out by the students under the supervision of the teaching staff, group discussion and individual supervision. The course provides guidance on all the steps a researcher needs to follow to design and use an agent-based simulation model. Students will be encouraged to work on their own research project and develop an original simulation model.

Participants will learn how to build economic models using the simulation platform Laboratory for Simulation and Development – LSD:

www.labsimdev.org and
<https://github.com/marcov64/Lsd>.

To whom it is addressed

The summer school is addressed to highly motivated **graduate and PhD students** as well as researchers and experienced modellers interested in computational social sciences.

Workshop on Economic Complexity and Development 10-11th Dec

Economic development is a complex phenomenon, involving heterogeneous agents, continuous innovations and structural changes. Understanding the unbalances and discontinuities in the process of economic development requires tools and thinking suited to deal with complex systems.

Beyond the course, students also will have an opportunity to attend the **Workshop on Economic**

Complexity and Development taking place in Curitiba from 9-10 December 2019 (no registration fees required).

Teaching staff

- Prof. Marco Valente (University of L'Aquila)
- Dr. Tommaso Ciarli (University of Sussex)
- Prof. João Basilio Pereima (UFPR)
- Prof. Marcelo Pereira (UNICAMP)
- Dr. Francisco Gabardo (UFPR)

Application Procedure

Extended deadline is 30-October 2019.

Candidates should upload PDF files in English contenting the following parts:

- **CV**,
- **Motivation letter** (max 2 pages)
- Where available, a **short project** describing the model they would be interested in developing (max 2 page),
- **Motivation letter for funding**, where needed.

Applicants should fill the on-line form and upload relevant material at the following link:

<https://goo.gl/forms/TeMy6ZMQ1G8ZzLw2>

Selection process will be disclosed **until 01-November**.

Participation Fee and Travel Support

Participation in the summer school is free of charge. The number of participants is restricted to 20.

Travel Assistance for Foreign Students

Financial assistance for travel expenses of up to US\$ 100,00 (domestic) or US\$ 300,00 (international) from INET-TSI is available. **Assistance is limited** and interested students should apply for it when filling in the above form.

Local expenses

All students are responsible for local expenses, such as lunches, dinners and accommodation. The local organisers will provide subsidized lunch and dinner (US\$ 1,45 each) in the canteen and coffee breaks. Vegetarian and vegan food are available.

Contact

Coordination - Prof. João Basilio Pereima
55(41) 98492-4117 joaobasilio@ufpr.br

PPGDE Secretariat - Andréa Silva
55(41) 3360-4405 ppgde@ufpr.br

Academic Support - Francisco Gabardo
55(41)99960-6503 gabardo.francisco@gmail.com

Advances in Economic Dynamics and Development: Economics and Complexity - 6th Meeting 2019

Summer School on Computational Methods and Agent Based Modelling in Economics

Preliminary Schedule - subject to change

December 02th to 06th, 2019

	Mon 02/12	Tue 03/12	Wed 04/12	Thu 05/12	Frid 06/12
Time	Morning - 09:00 to 13:00				
09:00	Welcome and Briefing	Introduction to LSD basic grammar and structure	Brian Arthur model	From model design to validation	Sensitivity analysis in LSD and R
10:00	Lecture Introduction to Complexity and Agent-Based Modelling	Using LSD to study a simple function with complex properties	Bringing all together	Work in groups or alone in building an assigned mode	
11:00	Break	Break	Break	Break	Break
11:30	Lecture Introduction to LSD: setup, language and programing.	My first model in LSD Replicator dynamics, the use of objects, and errors debugging	Lecture Scientific simulations in social sciences: a methodological discussion	Implementation of an exercise Work in groups in building an assigned model	Implementation of an exercise Work in groups in building an assigned model, and preapre presentation
13:00	Lunch	Lunch	Lunch	Lunch	Lunch
	Afternoon - 14:00 to 18:00				
14:00	Student presentations bio, research interests, research topic (5 mins each)	Individual discussion Each student will be assigned a tutor	Individual discussion Each student will be assigned a tutor	Individual discussion Each student will be assigned a tutor	Individual discussion Each student will be assigned a tutor
14:30		Group discussion Group discussion on students' research project in smaller thematic groups	Workgroup Group discussion on students' research project in smaller thematic groups	Workgroup Group discussion on students' research project in smaller thematic groups	Workgroup Group discussion on students' research project in smaller thematic groups
15:00	Introduction to LSD basic grammar and structure: Simple model exercises	LSD code and object structure Random walk: playing with objects and pseudo randomness. Extending an existing model	My first advanced model in LSD Smallwood and Conslisk consumer model	Implementation of an exercise Work in groups in building assigned model	Students' assignment presentations
17:00	Break	Break	Break	Break	Break
17:30	Group work on exercises	Group work on exercises	Group work on exercises	Group work on exercises validation techniques	Closing session End of Summer School
18:30	End of workday	End of workday	End of workday	End of workday	

Workgroups: During the **Workgroup** sessions, students will discuss their research projects with the teaching staff. These sessions will be aimed at helping students to improve their research projects and preparing them for publication. Students should send the final version of their projects to gabardo.francisco@gmail.com until 25/11/2019.



**Marco Valente
(L'Aquila - Italy)**

Associate Professor in Economics, Department of Industrial and Information Engineering and Economics, University of L'Aquila and visiting fellow at the University of Sussex, Science Policy Research Unit

(SPRU). **Research area:** Complexity, networks, demand and industrial dynamics, simulation modelling, methodology of simulations in social sciences; evolutionary economics.



**João Basilio Pereira
(UFPR, NeX - Brazil)**

Professor of Economics at the Department of Economics, Federal University of Paraná (UFPR). Coordinator of NeX-Núcleo of Economics and Complexity.

Research area: Complexity, agent-based economics, computational economics, growth and development, structural change, evolutionary economics, micro-macro economics.



**Tommaso Ciarli
(Sussex - UK)**

Senior research fellow at SPRU, University of Sussex.

Research area: economic development, micro-macro models, technological change, growth, and the effects of conflicts.



**Francisco Gabardo
(UFPR, NeX- Brazil)**

Pos-Doctorate researcher at the Graduate Program in Economic Development (PPGDE), Federal University of Paraná (UFPR).

Researcher at NeX-Núcleo of Economics and Complexity. **Research area:** Complexity, agent-based economics, computational economics, growth and development, structural change, evolutionary economics, micro-macro economics.



**Marcelo de Carvalho Pereira
(Unicamp - Brazil)**

Professor in Economics at the Institute of Economics, State University of Campinas (UNICAMP).

Research area: Industrial Organization, Institutional Theory, Evolutionary Economics, Social Network and Simulation Models.