



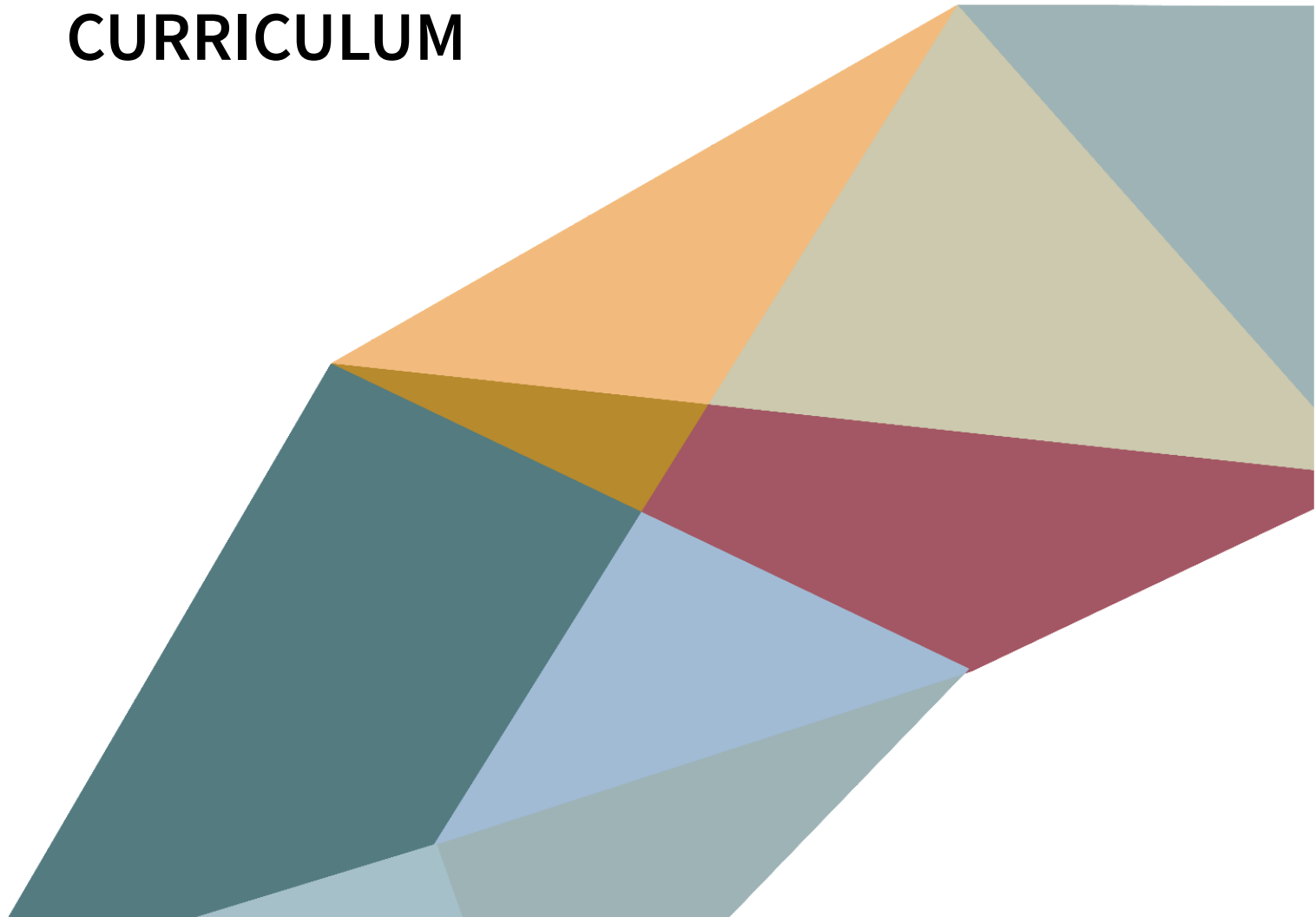
ACTISS

ACTION FOR COMPUTATIONAL THINKING
IN SOCIAL SCIENCES

INTRODUCTORY COURSE

People, Networks and Neighbours:
Understanding Social Dynamics

CURRICULUM



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People, Networks and Neighbours: Understanding Social Dynamics

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ACTION FOR COMPUTATIONAL THINKING
IN SOCIAL SCIENCES
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TABLE OF CONTENTS

| | |
|------------------------------|---|
| Course at a Glance | 3 |
| Course Trailer | 4 |
| Learning Objectives | 4 |
| Course Description | 5 |
| A Journey Through the Course | 6 |
| Course Structure | 7 |
| How to Use Course Materials? | 8 |
| Learner Reviews | 9 |

COURSE AT A GLANCE

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|---|--|
| Course title | People, networks and neighbours: understanding social dynamics: Quick and easy introduction to computational social science |
| Number of weeks/units | 3 |
| Number of hours per week/unit | 4 |
| Total study time | 12 |
| Summary | <p>Learn why social processes seem so unpredictable and understand better the basics of social dynamics.</p> <p>This course will help you understand why social processes seem so unpredictable and understand the basics of social dynamics better. It's designed to show you a new interesting way of approaching questions about social behaviour. Throughout, you'll focus on social mechanisms and will explore how models and simulations can help to understand those mechanisms.</p> |
| Target learners | <p>This course is designed for anyone who is interested in understanding human behaviour, especially in how different social processes work.</p> <p>It will be particularly useful for professionals dealing with situations where social change takes place (or is desirable) and where social influences play a role, such as in the context of public policy, business, marketing, and healthcare.</p> <p>If you are studying social sciences and are curious how a computational approach works, this course will be particularly helpful.</p> <p>If you are an academic teacher (also when you've had no prior experience with this approach yet) and you're considering enriching your own courses, we encourage you both to take the course on Futurelearn, and to use the materials for your students.</p> |
| Requirements / prerequisites for learners | None |
| Educator(s) | Agata Komendant-Brodowska, University of Warsaw Anna Baczko-Dombi, University of Warsaw with instructional design support from Tom Spits, University of Groningen and with the support of Educational team of ACTISS Project: Wander Jager, University of Groningen Katarzyna Abramczuk, University of Warsaw |

COURSE TRAILER



Click on video to view the trailer

LEARNING OBJECTIVES

At the end of the course learners should be able to:

- explain how behaviour of individuals can lead to unexpected results on a group or societal level
- describe a new way of looking at social phenomena, focussing on underlying mechanisms
- discuss how models can help decipher social processes
- argue how similar social processes are present across different contexts
- describe how modelling works, both with a simple pen-and-paper model and computer simulation of a social mechanism
- identify the opportunities that computational models offer for understanding social processes

COURSE DESCRIPTION

In all courses within the ACTISS programme we want to provide people who identify as having ‘no brain for science’ (a fear for computation and formulas) with a very gentle introduction to Computational Social Science, to pen-and-paper formal models and to Agent-Based Models. We want to build up interest in this domain and their confidence in this area. By the end of the course we want the learners to be able to experience how modelling and simulations can help understand social phenomena and to experience how investigating a social phenomenon with the use of an Agent-Based Model works. We also want them to be aware of the potential benefits of using a computational approach to practical situations and be willing to try them out.

In this course we want the learners to discover a new way of looking at social phenomena. We will explore how micro behaviours lead to macro outcomes and how unexpected things can happen on the way. So, we will be paying special attention to social dynamics. We will investigate some simple social processes (starting with a question of how people organise a small protest) with the help of simple models that illustrate how humans behave, how they influence each other and what unexpected outcomes may result from those behaviours. For that we will use examples, animations and simple tools - no mathematical and programming skills are required!

Throughout the course the learners will have an opportunity to:

- investigate pen and paper and computer models that illustrate social processes
- experiment with a simple simulation of a social mechanism
- explore unintended consequences of individual behaviour
- discover a new way of looking at social phenomena by focusing on social mechanisms that connect individual perspectives and the group/societal outcome
- experience how social simulations can help analyse problems
- identify common patterns of a social process within different domains
- recognise how computational models can help decipher a variety of social mechanisms
- summarise different possible uses of computational models for studying social phenomena

A JOURNEY THROUGH THE COURSE

First, we will explore how micro behaviours lead to macro outcomes and how unexpected things can happen on the way and it will give us an opportunity to explore:

- the complex nature of micro-to-macro link
- what is a formal model of social phenomenon
- how similar social mechanisms can be present across different contexts
- the butterfly effect (how small changes in initial conditions lead to big changes in final result)

Then we will move on to exploring how modelling works a bit further with an addition of introducing networks of social relations. The learners will:

- explore a simple pen-and-paper model of a process of social influence
- experience the importance of structural constraints of individual behaviour
- experience how small change can lead to a huge change or no change at all!
- observe dynamic processes and how growth is not always linear which will help us build up an intuition of non-linear dynamics

Finally, we move on from pen-and-paper to computational models. The learners will:

- play with an agent-based model (and learn what it is!)
- play with parameters (what is a parameter and what is its role in simulations)
- observe some real life applications of agent-based models and discuss how this approach can be useful, e.g. for designing public policies

COURSE STRUCTURE

Week 1: Recipe for revolution

This week introduces basic concepts of social dynamics, modelling and simulations. It introduces the concepts of: model, modelling and simulations. We start with asking the question about difficulties with predicting social behaviour and then we build a simple model of organising a protest (based on a simple threshold model).

Keywords: social dynamics, micro-macro problem, butterfly effect, model, modelling, simulation, computational social science, computational models

Week 2: Conformity, friends and networks

This week is about exploring how relations and networks impact social processes and it provides a quick glance at Social Network Analysis.

Keywords: social influence, social networks, social network analysis, computational social science, computational models

Week 3: Neighbours, flags and a bird's eye view

This week introduces spatial dimension to the models, we introduce the term Agent-Based Models and play with a simple simulation in NetLogo. We investigate how a protest may spread spatially with simple cellular automata (we don't use this term but it should be searchable by that term), show real-life examples of models and then wrap up all the course's activities.

Keywords: social dynamics, spatial models, neighbours, cellular automata, Agent-Based Models, ABM, NetLogo, social simulation, emergence, computational social science, computational models.

HOW TO USE COURSE MATERIALS?

If you want to learn:

- Start with checking out our list of Futurelearn courses available at actiss-edu.eu and pick the one you're most interested in. Courses on Futurelearn will provide you with a more user-friendly learning experience than learning by yourself with the help of our materials (progress tracking, automatic feedback to the quizzes, email reminders about the start of subsequent weeks, ability to discuss exercises with other learners etc.).
- If you prefer to learn by yourself or the courses that are most interesting to you are not available at the moment, please download the course materials (a set of materials sorted by weeks) and go through the subsequent steps: articles, videos (links to all YouTube videos are provided in the text), exercises. All the links to videos and models to be experimented with are provided within the text. Correct answers to quizzes are provided at the end of each week's materials.

If you're a teacher:

- Check out broader instructions for teachers that are provided in the Teacher's Guide, available for each course, at actiss-edu.eu
- We encourage you to use the materials to enrich your courses: you can download all the materials for the course and use them as a whole segment or pick the ones that best suit your needs. Educational materials are divided in weeks (units) and each week consists of a series of appr. 20 small steps:
 - short articles - max.1000 words, usually followed by a discussion prompt,
 - short videos - max. 6 minutes (links are included in the text),
 - discussion questions,
 - exercises (if they relate to models, links are included in the text),
 - quizzes (2-6 questions to check student understanding)
- Some steps may be used as a homework assignment (articles, videos, exercises), some can be used within a classroom setting (discussion questions, exercises, quizzes)
- Educational materials are downloadable as a set of pdf files, each containing one week's materials and additional exercises and educational scenarios are provided in the Teacher's Guide for a certain course

LEARNER REVIEWS



Most marvellous course "People, Networks and Neighbours: Understanding Social Dynamics." Puts meaning/analysis to stats we so often see, clarifying/quantifying surveys and data collection.

Hannah B., 08/07/21



Enjoyed the course - I'm actually using the information learned.

Sarah K., 24/07/21