



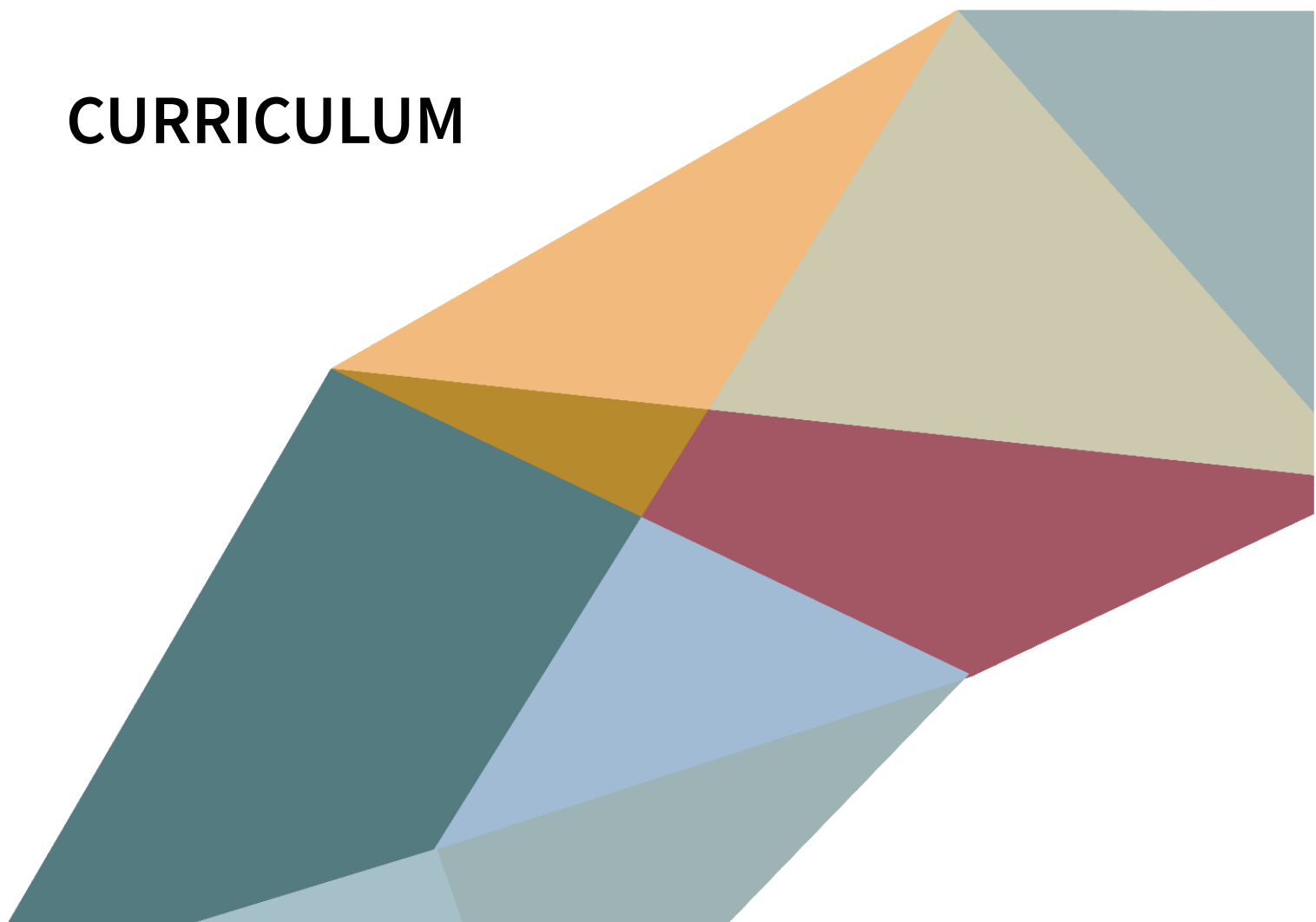
ACTISS

ACTION FOR COMPUTATIONAL THINKING
IN SOCIAL SCIENCES

THEMATIC COURSE

Social Network Analysis: The Networks Connecting
People

CURRICULUM



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Social Network Analysis: The Networks Connecting People

CURRICULUM

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IN SOCIAL SCIENCES
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COURSE AT A GLANCE

Course title Social Network Analysis: The Networks Connecting People:

Number of weeks/units 3

Number of hours per
week/unit 3

Total study time 9

Summary **Learn how norms, viruses and info spread through social networks.**
This course explores how networks form, and how they impact the spreading of different types of information in society.

Target learners This course is designed for anyone interested in developing their understanding of the basic concepts of social network theory and how information, viruses, and norms spread through society. It will be particularly useful for professionals dealing with situations where social influences and processes of diffusion play a role, such as in the context of public policy, business, marketing, and healthcare. If you already study social science and would like to develop your skills in maths, computers, and formal modelling, this course will help.

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.

**Requirements /
prerequisites for
learners** None


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COURSE TRAILER

Social Network Analysis: The Networks Connecting People 531 enrolled on this course [Go to course](#)

[Overview](#) [Topics](#) [Start dates](#) [Requirements](#) [Educators](#) [More courses](#)

Warsaw and Groningen are experts in CSS, and this course offers students the chance to learn from four leading social science scholars.



[View transcript](#) [Download video: standard or HD](#)

[Support](#)

Click on video to view the trailer.

LEARNING OBJECTIVES

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

- Compare how different network structures affect social dynamics
- Identify how key properties of social networks connect with the spreading of different influences such as viruses, norms and properties of products
- Experiment with different social influences and network structures and how they impact diffusion dynamics
- Assess situations where “small scale tribal mechanisms” such as local norms have an impact on global network dynamics

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: Living in communities

Humans are a very social species, and they interact a lot. These interactions may address the exchange of information, the sharing of norms, and the transmission of viruses, to name a few examples. Our network history starts with thousands of generations of hunter gatherers, living in relative small tribes and families. This week we will explore some of the fundamentals of interactions within such networks. Because network dynamics evolve over longer time periods, and involve large numbers of people, it is difficult to experiment with them. Therefore, social scientists increasingly use computer simulations to study the dynamics of social networks. This week you will play with easy to use simulation models to get hands-on experience with the dynamics of networks and key concepts of network theory.

Week 2: The larger agricultural society and hubs

This week deals with the role of “hubs” or “superspreaders” in social networks, and will introduce you to the sharing of information and normative influences that are important in the spreading of e.g. products, ideas and opinions in social networks.

Week 3: Global society and social influences

This week is about the global network and local norms.

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