ACTISS

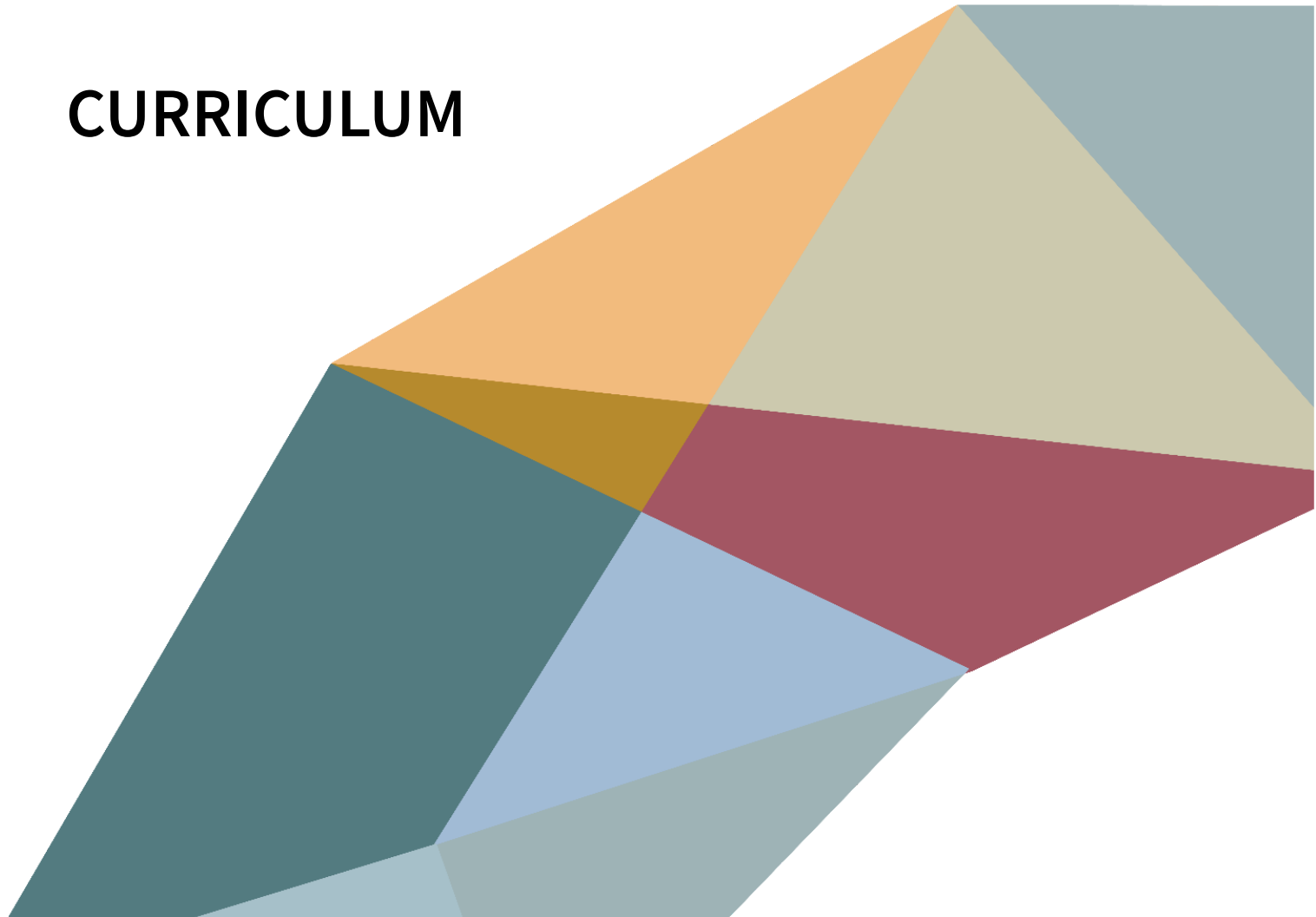**ACTION FOR COMPUTATIONAL THINKING IN SOCIAL SCIENCES**

THEMATIC COURSE

Decision Making in a Complex World: Using Computer Simulations to Understand Human Behaviour

CURRICULUM

THEMATIC COURSE

Decision Making in a Complex World: Using Computer Simulations to Understand Human Behaviour

CURRICULUM

Authors:

Wander Jager, University of Groningen

Katarzyna Abramczuk, University of Warsaw

Agata Komendant-Brodowska (Project Leader), University of Warsaw

Educational experts:

Esther Arindell, University of Groningen

Tom Spits, University of Groningen

In cooperation with:

Anna Baczko-Dombi, University of Warsaw

Nataliia Sokolovska, The Alexander von Humboldt Institute of Internet and Society

TABLE OF CONTENTS

COURSE AT A GLANCE

Course title	Decision Making in a Complex World: Using Computer Simulations to Understand Human Behaviour
Number of weeks/units	2
Number of hours per week/unit	3
Total study time	6 hours
Summary	The learners of this course will study how humans make decisions by exploring illustrative videos, short articles, and simulations on your own computer.
Target learners	Students (Bachelor and Masters) in social sciences who are curious about CSS (studying at bachelor level). Teaching staff of social scientific programmes, curious about CSS. Students (Bachelor and Masters) in computational sciences that have an interest in targeting human behaviour. General audience: everyone curious to learn more about how people make judgments and decisions in a complex world
Requirements / prerequisites for learners	None, but having done the first CSS course (Introductory Module) will help.
Educator(s)	Wander Jager; Katarzyna Abramczuk

COURSE TRAILER

Click on video to view the trailer

Trailer text:

Climate change, loss of bio-diversity, managing a pandemic, these are all problems we face as humanity that require an adaptation of our behaviour and the choices that we make. Many policies are developed to support such behavioural changes, for example the taxation of fossil fuel, informing us about the state of nature and legislation on wearing masks and social distancing. Increasingly, models are being used to forecast the impact of policy. And obviously, these models are based on assumptions on human behaviour.

Economics has always been a discipline where formal models were being used, and as such it is no surprise that many policy models are based on assumptions of economic rationality of the people. However, we do not behave as individually optimising people. Instead, we have habits, learn from others and are often satisfied with "good enough" choices. And these mechanisms have serious impacts on the effect of policies.

For example, informational campaigns on the impact of our meat consumption on the environment hardly change the food habits that we have, despite the widespread concern we share about this environment. At the same time we see hipsters changing towards a plant based diet, and their lifestyle seems to be contagious, thus spreading the habit of eating plant based food.

In recent years, computational social science has made important steps in capturing social scientific theory into models of human decision making. In this course we will introduce you to some of the latest developments in simulating human behaviour.

Join us!

LEARNING OBJECTIVES

By the end of the course, you'll be able to...

- Explain how humans make decisions, according to classic and more contemporary theories on human decision making from different disciplines: economics, psychology and sociology.
- Explain how the environment and societal clues can shape choices and the other way around.
- Apply a simple algorithm / model describing a decision process in a chosen situation.
- Experiment with different individual decision processes and their impact on the social level.
- Debate the need for accurate representation of individual choice and decision behaviour when analysing social phenomena.
- Identify which human behaviour has been included in a (computational) model.

COURSE DESCRIPTION

Gain insights into the social phenomena around making choices

People use social cues to help them make decisions in diverse situations. This information is often scarce and uncertain but is also sometimes overwhelmingly abundant. With so many variables, how does the human decision-making process actually work?

In this three-week course the experts from the University of Groningen and University of Warsaw will explain decision making in the complex world that we live in. Their unique approach encompasses not only conventional theories about social norms but also cutting-edge computer simulation frameworks that help make sense of human behaviour.

Review historical and current theories on the decision-making process

In this course, you'll draw on classic theories of human behaviour, social learning, and social norms as well as the latest thinking in economics, psychology, and sociology.

This background will help you understand the concept of rationality in decision making, as well as how environmental and social cues shape and are shaped by the choices we make.

Apply a computational approach to human decision making

After looking at the theory behind social phenomena and social reality, you'll get to apply a simple algorithm and see how it describes the decision process in a specific situation.

You'll also get to experiment with variations in decision processes that occur naturally among people by running them through the computer simulation.

See how individual behaviour and social reality shape each other

The University of Groningen is known for delivering both engaging material and strong academic support, and this course is no exception.

Blending classic and modern ideas about social learning, and showing how modern technology can be used to understand social norms, the University gives great insights into how and why individuals and groups make the choices that they do.

COURSE STRUCTURE

Week 1: Modelling individual choices

This week we will reflect on how people make decisions and judgments. We will think about what a rational decision is and how it can be modelled. We will see how choice behaviour may change depending on the circumstances. Finally we will discuss the theory of bounded rationality developed by psychologists and economists and see how it can help us understand choices when information available is scarce and cannot be relied upon.

Week 2: The social dimension

This week we will reflect on the social dimension of how people make decisions. When we make decisions as humans, we take advantage of the information that is around us, to help us inform what the best decision is. New elements will be added to models of decision-making and we will use simulations to explore how these elements change the process and results.

Week 3: Integrating decision making into models

In the previous week, we started slowly to include new elements into the simulations. We added exploration, information exchange, normative influence and network density as factors. This week we will explore a bit deeper what different aspects of human decision making and behaviour can be integrated in 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