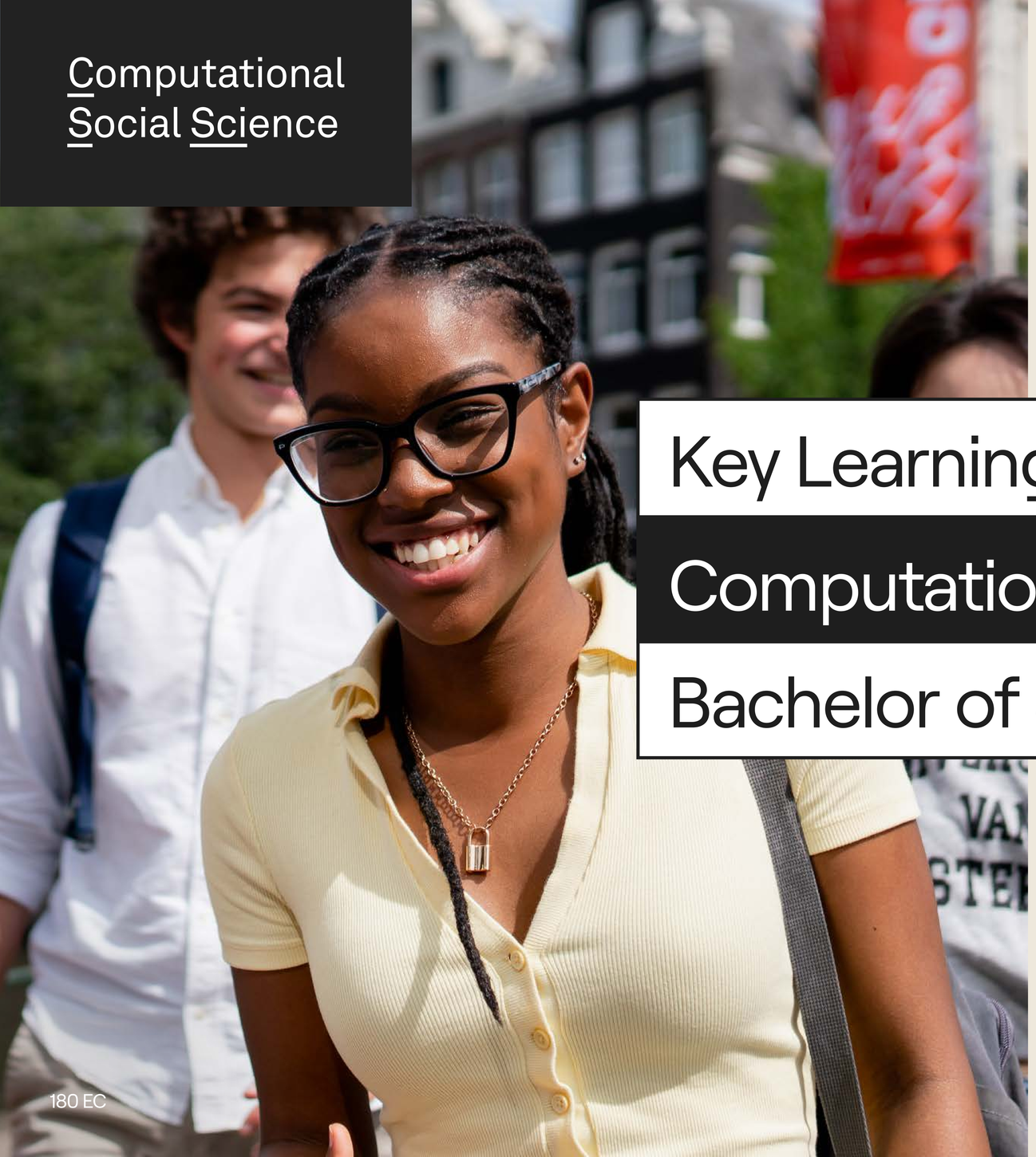
Computational
Social Science



Key Learnings

Computational Social Science

Bachelor of Science

180 EC

University of Amsterdam

CSSci Information

(CSSci)

Basic information on Computational Social Science

Programme
Computational Social Science

Host
Faculty of Social and Behavioural Sciences (FMG) in collaboration with Faculty of Science (FNWI) and Faculty of Humanities (FGw)

Location
Roeterseiland Campus

Programme director
dr. Eelke Heemskerk

Chair of Examinations Board
dr. Sarah de Lange

Intended degree
Bachelor of Science

Number of credits
180EC

Mode of study
Fulltime

Variants of programme
None

Tracks
None

Language of instruction
English

Curriculum specifics
- Project-based teaching and learning.
- Semester-long courses of 30EC.
- Social Sciences & Humanities Expertise, Research Expertise, Digital Expertise and Change Making Expertise.

Year 01

Foundation (738100001Y, Semester 01, 30EC)
Appreciating the complexity of social challenges.

Building Blocks (738100002Y, Semester 02, 30EC)
Experimenting with digital interventions of behavioural change.

Semester 01
30 EC

8 EC
Social Sciences & Humanities Expertise

- Wicked problems
- Climate change theory & writing case study
- Academic reading & writing
- Behaviour change wheel
- Structure agency debate
- Surveillance theory

10 EC
Research Expertise

- Basics of qualitative research
- Semi-structured interviews
- Empirical cycle
- Research report & infographic
- Quantitative research design
- Research proposal
- Data Management
- Ethical considerations human participants
- Survey

8 EC
Digital Expertise

- Basics of computational thinking
- Basics of Python
- Basics of programming
- Programming & modelling in research
- Text analysis
- Data analysis & processing
- Data visualisation

4 EC
Change Making Expertise

- Collaborative skills
- Stakeholder management
- Personal manifesto
- Issue tree as analysis tool

Semester 02
30 EC

11 EC
Social Sciences & Humanities Expertise

- Theories of planned behaviour
- Theory of diffusion & acceptance of digital tools by users
- Academic skills: literature reviews
- Academic skills: research reports
- Behavioural interventions
- Theory comparison for alternative prototypes
- Academic skills: peer-reviewing and rewriting
- Academic skills: persuasive writing

8 EC
Research Expertise

- Research questions & selecting research designs
- Focus groups
- Online experiments
- Descriptive statistics
- Reliability of experimental designs
- Inferential statistics
- Assumptions & biases involving human participants
- Ethical, legal & social aspects regarding human participants

7 EC
Digital Expertise

- Human Computer Interaction/User Experience Design
- Wireframing & prototyping
- Basics of Web & Web Development Stack
- HTML & Python Flask
- Data Retrieval
- Data Cleaning
- User Tracking Systems

4 EC
Change Making Expertise

- Project management
- Problem analysis
- Stakeholder interviews
- Prototype development
- Storyline development
- Problem definition
- Literature research
- Argumentation
- Presentations

Year 02

Connections (Semester 03, 30EC)
Linking data for better interventions in health or mobility systems.

Structures (Semester 04, 30EC)
Applying responsible AI to reduce inequality.

Semester 03
30 EC

7,5 EC

Social Sciences & Humanities Expertise

- Social theories characteristics
- Social theory source finding for specific cases
- Social theory concept application, system & social practice modelling
- Stakeholder analysis of experiences, behaviour & interaction
- Social construction of technology
- Political economy of networks
- Intellectual property, network effects & standard setting in technological and digital change
- Critical studies perspective on social media platforms
- Governance theory

6 EC

Research Expertise

- Collecting datasets of digital behaviour and communication
- Discourse analysis
- Content analysis
- Mixed methods approaches
- Sampling bias
- Scientific integrity principles
- Data management principles

12 EC

Digital Expertise

- Basics of machine learning (mathematical knowledge & skills)
- PCA, factor analysis
- Data linkage
- Statistical and machine learning techniques
- Design & implementation of databases
- Database management structures

4,5 EC

Change Making Expertise

- (Principles of) System thinking
- System perspective on mobility & health
- Identification of systemic conditions & analytical levels
- Report on public perceptions production
- Reframing questions
- System visualisation
- Transition perspective in stakeholder analysis revision
- Systemic intervention identification and justification

Semester 04
30 EC

6 EC

Social Sciences & Humanities Expertise

- Structural inequality, bias & stratification recognisition
- Reproduction of ideational & material structures by AI design choices
- Analysis of ethical, legal & societal impact of AI
- Identification of sources of bias & power relations to develop socially responsible AI

4 EC

Research Expertise

- Predictive statistics
- Reliability of predictions
- Assumptions & biases in research designs involving data collection of digital behaviour & communication
- Ethical, legal & social aspects of research designs involving data collection of digital behaviour and communication

16 EC

Digital Expertise

- Fundamentals of deep learning
- Designing socially responsible AI solutions
- Recommendation (predictive systems)
- Algorithm audits
- Ethical implications, data fairness & liability issues of (implementation of) machine learning

4 EC

Change Making Expertise

- Power and values in design methods
- Changemaking methods
- Reflection on collaboration with stakeholders
- Analysis of ethical aspects of AI interventions
- (Future) Scenario development of digital tools influence

Year 03

Minor / Electives (Semester 05, 30 EC)
Broadening or deepening expertise.

Capstone (Semester 06, 30EC)
Making social change with digital innovations.

Semester 05
30 EC

30 EC

Free choice of...

Minor programme
Elective courses
Student exchange programme
Internship

Semester 06
30 EC

8,5 EC

Social Sciences & Humanities Expertise

- Multidisciplinary theories on social challenges
- Challenge diagnosis: Stakeholder & local context identification and involvement
- Explanation & reflection diverging perspectives of stakeholders
- Theoretically informed vision creation on digital interventions

8,5 EC

Research Expertise

- Research questions & hypotheses for empirical studies on the basis of societal and/or stakeholder needs
- Selecting research designs appropriate to the research question
- Assumptions & biases regarding data collection & analysis strategies
- Ethical, legal & social aspects of data collection & analysis strategies

8,5 EC

Digital Expertise

- Modelling, design, development, evaluation & management of interactive information systems
- Database management processes
- Machine learning

4,5 EC

Change Making Expertise

- Creation of ideas for opportunities for change
- Team member engagement
- Professional communication
- Project evaluation
- Collaborative skills
- Learning skills
- Agility of digital interventions
- Synthesis of knowledge
- Requirements for (sustainable) digital innovation
- Project reporting
- Decision-making skills

WANT TO KNOW MORE?

Can’t find what you’re looking for, or looking for more in-depth information into our new and innovative degree programme?

Please get in touch with our programme director; he is happy to help!

EELKE HEEMSKERK

Eelke Heemskerk
e.m.heemskerk@uva.nl