



Computational Social Science | SOU44081

Year	Senior Sophister
ECTS Credits	10
Contact Hours	22
Pre-requisite	
Semester	1
Module Leader & Lecturer	Prof. Taha Yasseri
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Module Outline:

This module introduces and discusses key principles and concepts in computational social science (CSS). It covers the historical background and the most recent developments in and applications of CSS. The course provides an overview of four main areas in CSS: big data-driven observational studies, social network analysis, machine learning and data science approaches, and social simulation and modelling. This module offers a discussion on CSS methodology and design by analysing various recent research examples. Where possible, topics will be enhanced with empirical examples and applications from industry, NGOs, and the public sector.

Module Learning Objectives:

On successful completion students will:

- have acquired a good overview knowledge of the main theories of the CSS paradigm as causal explanatory frameworks that shed new light on the nature of human and social dynamics;
- be able to identify and discuss a number of key methodological tools in CSS: present the main classes of entities, objects, and relations common to the computational analysis of social complexity;
- be able to identify some of the main applications of this field in industry, NGOs, and the public sector.

Assessment:

- 50% Weekly assignments
- 50% End-of-term essay

Recommended Reading List:

- Lazer, D., Pentland, A., Adamic, L., Aral, S., ... & Jebara, T. (2009). Computational social science. *Science*, 323(5915), 721-723.
- Wallach, H. (2018). Computational social science≠ computer science+ social data. *Communications of the ACM*, 61(3), 42-44.
- Yasseri, T. (2019). What is Social Data Science and how is it done? Sage <https://campus.sagepub.com/blog/what-is-social-data-science>.
- Lazer, D. M., Pentland, A., Watts, D. J., Aral, S., Athey, S., Contractor, N., ... & Wagner, C. (2020). Computational social science: Obstacles and opportunities. *Science*, 369(6507), 1060-1062.