

Advanced workshops of analysis methods - Introduction to graph theory and statistical network models for psychologists

Due to the COVID-19 crisis, the information below is subject to change, in particular that concerning the teaching mode (presential, distance or in a comodal or hybrid format).

2 credits	15.0 h	Q2
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Teacher(s)	Heeren Alexandre ;
Language :	English
Place of the course	Louvain-la-Neuve
Aims	<i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i>
Evaluation methods	Due to the COVID-19 crisis, the information in this section is particularly likely to change. First session: Oral test (9 points /20) and oral presentation and discussion of a research paper (7 points / 20) + continuous assessment via homeworks (4 points / 20) Second session: Oral test (20 points /20)
Teaching methods	Due to the COVID-19 crisis, the information in this section is particularly likely to change. Teaching and assessment will be delivered via a classroom setting, on the Louvain-la-Neuve campus, but could be carried out remotely (via Teams) should the health situation require to do so.
Content	Graph theory and network analysis have started to infiltrate psychological sciences, especially in research agendas dealing with large datasets. Accordingly, this course will provide a general overview of the application of graph theory and network analysis in psychological sciences. Applications on real data sets will be provided throughout the workshop. Given the audience's diversity, illustrations will range from social networks to brain networks and symptoms networks. Through this course, participants will: - become familiar with general notions of graph theory and network analysis - learn how to model network data using R, to implement algorithms from the field of graph theory (e.g., community detection, small-worldness), and to use up-to-date tools from statistical network analysis (e.g., graphical Lasso, subset bootstrap, Bayesian modeling) to optimize network estimation and visualization - understand the advantages, challenges, and limitations of network analysis in comparison to other analytical approaches - and become able to critically assess papers dealing with network analysis and graph theory in psychological sciences.
Inline resources	Handouts, as well as examples of R programming codes, will be made available via Moodle.
Bibliography	A list of reading articles will be provided at the end of each session.
Faculty or entity in charge	EPSY

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Aims
Master [120] in Psychology	PSY2M	2		