

Module title Social Network Analysis							
<b>Module code</b> Tba	<b>Level</b> Bachelor (B.Sc.)		Hours per week 4		ECTS credits 5	Dura ~2 w lectu	<b>ition</b> reeks block course + virtual res
<b>Module instructor</b> Dr. Pierpaolo Dondio, Technological University Dublin		Lecture type Lectures + Guided Lab Sessions		<b>Prerequisite(s)</b> Intermediate Programming Ability		ý	<b>Grading</b> 2 assignments
Objectives   Everything is connected: people, information, the web, events and places, all the more so with the advent of online social media. A practical way of making sense of the tangle of connections is to analyze them as networks. This module provides the tools to conduct a social network analysis research, drawing on knowledge from disciplines as diverse as sociology, mathematics, computer science and physics. The module is intended to provide tools for hands-on analysis of real-world data sets, aimed to support a range of tasks: from describing key features of a network to identifying important nodes in the network, detecting communities, measuring network resilience and structural properties to explaining network formation. The focus is both theoretical (e.g., what are the key concept of social network analysis) and methodological (e.g., how do we actually carry out research on social networks).   Learning Outcomes 1   Demonstrate an understanding of the theoretical concepts underlying social network analysis   2 Choose the proper strategy for data collection in network analysis   3 Design and develop data gathering applications   4 Perform descriptive analysis of a network and yisualize networks, such as Gephi, NodeX or R   6 Analyse the structure of a network and perform hypotheses testing   7 Analyse advanced networks such as multi-modal and multi-level networks							
Content   Introduction and Mathematical foundation   Basic Network Concepts   Network Data Collection   Measure of Centralities   Communities detection and modularity, subgroups, clustering coefficient   Network Models: E-R model, preferential attachment models, Small World models   Network Resilience   Diffusion Models   Assortativity, Homophily and Rich Club effect   Bi-partite networks and Ego Networks   Hypothesis testing							

• Analyzing Social Networks. Stephen P Borgatti, Martin G Everett, Jeffrey C Johnson. SAGE Publications, Jan 2018

Note: this is not the official course descriptor according to the "Studien- und Prüfungsordnung" (SPO)