



Pilot Course Curriculum and Intervention Plan for Social Network Analysis (UEF)

**“Improving the quality and sustainability of
learning using early intervention methods based
on learning analytics”**

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1 General course information

Course name	Social Network Analysis _ Advanced (SNA)
Institution	University of Eastern Finland
Course level	[Graduate]
Teaching model	[Hybrid]
Course learning objectives	<ol style="list-style-type: none"> 1. Describe the types of networks, concepts, network representations and analysis methods. 2. Collect network data, create networks in appropriate format from different sources . 3. Analyse networks using visual methods with different layouts, tuning techniques and software. 4. Analyse networks using statistical methods on both the individual and network level. 5. Identify significant communities, nodes and structures and create meaningful reports using real life data. 6. Describe the dynamics of the networks, how networks form and evolve.

2 Motivation and purpose (Why)

Goal of the inquiry	
What do you want to learn about the teaching and learning process?	<p>Getting insights into students’ engagement with online learning resources.</p> <ol style="list-style-type: none"> 1. Improving Student Engagement with Learning Activities: Monitor student interaction with course materials on the LMS to identify patterns and areas for improvement. 2. Engagement in Assignment Work: Measure the level of student participation and completion rates and analyze the quality of submissions 3. Group Collaboration: Monitor the contribution of individual students within their groups to identify any issues with group dynamics.

3 Defining more precisely what to explore (What)

Specific questions of interest	
Key inquiry questions	<ol style="list-style-type: none"> 1. How students making use of all the learning resources provided to them? And what are most and least utilized by students? 2. How do students' self-reported effort levels compare with their actual engagement data (e.g., time spent on LMS, participation in Discord discussions)? 3. Are there differences in engagement between students attending the course in different modalities? 4. How do students incorporate AI-generated data into their assignments and final projects?
Data sources	<ol style="list-style-type: none"> 1. Lecture Engagement: Learning management systems LMS logs and Zoom attendance records 2. Assignment Submission and Grades 3. Responses from weekly SRL surveys. 4. AI Conversation Data 5. Discord Group Interactions: Activity logs from Discord.

4 Data collection strategy (How)

Data sources		<ul style="list-style-type: none"> • LMS logs and grades • Discord • Survey data 	
Data aggregation		Data will be collected in xAPI format and integrated into Learning Locker either directly from the LMS plugin or through the csv2xAPI tool developed within the ISILA project	
Detailed methods for data collection			
Week#	Topic	Learning activities and materials	Data source(s) and collection method(s)
1	Introduction to SNA	<ul style="list-style-type: none"> • Lectures (slides) • slides • Scientific articles 	<ul style="list-style-type: none"> - Interaction with course materials, logged in the course LMS - Assignment grades and submission logs from LMS - Filling out SRL survey
2	Working with Gephi	<ul style="list-style-type: none"> • Lectures (slides) • Scientific articles • Assignment 1 (constructing first SNA), • Group formation 	<ul style="list-style-type: none"> - Interaction with course materials, logged in the course LMS - Assignment grades and submission logs from LMS - Filling out SRL survey
3	Centrality Measures	<ul style="list-style-type: none"> • Lectures (slides) • Scientific articles • Lectures, slides, videos Assignment 2 (calculate centrality from published and AI-generated data) 	<ul style="list-style-type: none"> - Interaction with course materials, logged in the course LMS - Assignment grades and submission logs from LMS - Filling out SRL survey

4	Communities in Networks	<ul style="list-style-type: none"> • Lectures, slides, videos, Assignment 3 (plot network and identify clusters) 	<ul style="list-style-type: none"> - Interaction with course materials, logged in the course LMS - AI conversation - Assignment grades and submission logs from LMS - Filling out SRL survey
5	Literature Review on SNA	<ul style="list-style-type: none"> • Scientific articles • Lectures, slides, videos Assignment 4 (review of literature for given 5 SNA articles) 	<ul style="list-style-type: none"> - Interaction with course materials, logged in the course LMS - Assignment grades and submission logs from LMS - AI conversation - Filling out SRL survey
6	Group Work Presentations	<ul style="list-style-type: none"> • Instructions (slides) • Group Presentation 	<ul style="list-style-type: none"> - Assignment grades and submission logs from LMS - Discord logs - Filling out SRL survey
7	Final Project Submission	<ul style="list-style-type: none"> • Final project (using group project data and AI-generated data) 	<ul style="list-style-type: none"> - Assignment grades and submission logs from LMS - AI conversation - Filling out SRL survey

5 Data analysis and interpretation (So What)

<p>Sense making and interpretation context</p>	<ol style="list-style-type: none"> 1. Use dashboards to visualize engagement levels. 2. Analyze correlations between activities and outcomes. 3. Identify students that are in the bottom quartile of activity and self-regulation 4. Compare results with course goals and prior expectations. 5. Analyze feedback from students on their learning experience and Use this feedback to make continuous improvements to the course. 6. understand how actively students are interacting and collaborating on Discord.
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6 Interventions plan (Now What)

<p>Potential interventions</p>	<p>Individual Level:</p> <ol style="list-style-type: none"> 1. Personalized Support: Schedule one-on-one meetings to discuss challenges and provide tailored guidance. 2. Additional Resources: Offer extra study materials and resources. 3. rying to understand students’ personal situation that might cause low engagement and try to help if possible 4. Regular Check-ins: Monitor their progress and provide continuous encouragement and feedback. <p>Group Level:</p> <ol style="list-style-type: none"> 1. Facilitate Group Discussions: Encourage open communication within groups to address any collaboration issues. 2. Add more gamification or motivating activities if attendance drops, or provide more rewards 3. Balanced Participation: Ensure all group members are contributing equally and provide support to less active members. 4. Conflict Resolution: Address any conflicts to maintain a positive group dynamic. 5. Add extra resources for difficult concepts
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