Investigating with AI – 2026/2027

Professor: Andrei Mogoutov
Academic Year: 2026/2027
Course length: 24 hours (6 sessions × 4h)

Course Description

This workshop-based course introduces students to the use of Large Language Models (LLMs) and AI agents for social science investigations. Students learn to collect, analyze, and visualize online data with AI, moving beyond traditional digital methods. AI is used both as an analytical instrument and as a practical tool for coding, automation, website creation, and publication of interactive research outputs. Political, social, and ethical issues related to AI may also serve as research topics.

Each session combines a methodological introduction by the professor with hands-on project work. Methods are explained conceptually, including their mathematical and computational principles, without equations or excessive technical detail. The course is organized around group research projects (4–5 students) validated by the professor. Students design a research protocol, build datasets, construct AI-assisted analysis pipelines, and critically assess the strengths and limitations of AI-based research.

The course culminates in group oral presentations evaluated by invited experts or faculty members, followed by the publication of a digital interactive report and an individual reflective note.

Course Objectives

- Understand the concepts underlying LLMs and AI-assisted research
- Design and structure digital research projects
- Practice online data collection (APIs, scraping, corpora building)
- Explore text analysis approaches (NLP vs LLMs) and agentic platforms
- Produce analytical results, visualizations, and interactive websites
- Critically assess biases, limitations, and methodological risks of AI-assisted methods

Methodological Skills Acquired

- Structuring digital humanities and computational social science projects
- Working in Google Colab for experimentation and prototyping
- Using coding assistants such as Claude Code and similar tools
- Accessing and manipulating online data via APIs
- Building datasets and pipelines for NLP and machine learning
- Using agentic platforms to automate analysis and reporting
- Generating code with LLMs for website creation and publication
- Understanding ethical, legal, and epistemic limits of scraping and LLM usage

- Comparing NLP-based and LLM-based analytical approaches

Requirements

No prior technical skills are required.

Class Sessions (6 × 4h)

Session 1 – Introduction & AI for Social Science (4h)

- Course overview, expectations, and evaluation
- Overview of the AI landscape (LLMs, agents, platforms)
- Examples of AI-based investigations in social sciences
- Epistemological and methodological foundations of AI-assisted research
- Discussion of research topics and initial project ideas

Session 2 – Research Design & Project Structuring (4h)

- Formulating research questions suitable for AI-based investigation
- Choosing data sources, methods, and tools
- Research protocol design and feasibility assessment
- Group formation and validation of project topics
- First project sketches and feedback

Session 3 – Data Collection & Dataset Construction (4h)

- APIs, scraping, and ethical constraints
- Hands-on data collection in Google Colab
- Data cleaning, structuring, and storage
- Corpus building and documentation
- Initial exploratory inspection with AI tools

Session 4 – Analysis & AI-assisted Exploration (4h)

- Overview of NLP methods versus LLM-based approaches
- LLM-assisted annotation, extraction, and classification
- Agentic workflows for analysis automation
- Visualization of intermediate results
- Project work with instructor feedback

Session 5 – Results, Visualization & Publishing (4h)

- Interpreting and validating AI-assisted results
- Advanced visualizations and interactive representations
- Using LLMs to generate code for websites and reports
- Structuring the final digital interactive report

- Preparing oral presentations

Session 6 – Project Presentations & Critical Discussion (4h)

- Group oral presentations
- Feedback from invited faculty member(s) and/or external expert(s)
- Collective discussion on methods, limits, and biases
- Wrap-up: lessons learned and perspectives for AI in social sciences

Course Validation

Group Oral Presentation
At the end of the last session, each group presents its project. Presentations are evaluated by invited faculty member(s) and/or external expert(s), who provide feedback and suggestions.

Final Group Report
Each group submits a digital interactive report incorporating the feedback received during the oral presentation.
Due: one week after the last session.

Individual Reflective Note
Each student submits a short analytical note reflecting on the project, the methods used, and the role of AI.
Due: one week after the last session.

Evaluation

- Group oral presentation: 50%
- Final group report: 40%
- Individual reflective note: 10%