Smart Solutions for Sustainable Societies

This interdisciplinary course explores innovative, data-driven, and socially responsible approaches to building sustainable societies. Drawing on real-world case studies from business, public policy, and healthcare, students will engage with cutting-edge concepts and methodologies to develop smart, scalable solutions for pressing sustainability challenges.

Designed for Master's and PhD students across multiple disciplines, the course combines problem-based learning, flipped classroom techniques, and simulation workshops to provide a comprehensive understanding of data, responsibility, and resilience across sectors.

by Liana Maznyk

Course Overview & Objectives

This course bridges multiple disciplines to address complex sustainability challenges through innovative approaches. Students will learn to leverage data analytics, technology, and collaborative problem-solving to develop smart solutions for real-world problems.

The curriculum draws from business, public policy, healthcare, and environmental sectors to provide a holistic understanding of sustainability issues and potential interventions. By the end of the course, students will be equipped to design and implement data-driven strategies that promote social responsibility and resilience.

Understand data-driven approaches to sustainability

Explore how analytics can inform decision-making across sectors

Develop socially responsible solutions

Learn to balance economic, social, and environmental considerations

Build resilience strategies

Create frameworks for adapting to socio-economic challenges

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Target Student Groups

Business & Management

Students focusing on sustainable business practices, corporate social responsibility, and ethical leadership in organizational contexts. These students will gain insights into implementing data-driven decision-making for responsible business operations.

Environmental & Social Policy

Students studying policy development, implementation, and analysis with a focus on environmental sustainability and social welfare. This course will enhance their ability to design evidence-based policies for complex societal challenges.

Data Science & Analytics

Students developing technical skills in data analysis, visualization, and interpretation. The course will provide real-world contexts for applying these skills to sustainability problems across various sectors.

Public Health & Economics

Students exploring the intersection of health systems, economic development, and social welfare. They will learn to analyze and address complex challenges at the nexus of public health and economic sustainability.

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Innovative Teaching Approaches

Problem-Based Learning

Students tackle complex real-world challenges such as improving sustainability in a national food industry or increasing employee wellbeing through data insights. This approach fosters critical thinking and practical application of theoretical concepts.

Flipped Classroom

Core lectures are pre-recorded, allowing in-class sessions to focus on discussion, application, and co-creation of solutions. This maximizes interactive learning time and encourages deeper engagement with course materials.

Simulation & Scenario Planning

Students participate in simulated socio-economic crisis scenarios to explore resilience-building strategies. These workshops develop adaptive thinking and prepare students to respond effectively to real-world sustainability challenges.

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Integration of Technology & Digital Tools

The course leverages cutting-edge digital tools to enhance learning and develop practical skills that students can apply in professional settings. These technologies support collaborative problem-solving, data visualization, and interactive engagement throughout the course.

Students will gain hands-on experience with industry-standard tools while developing solutions for sustainability challenges. The integration of these technologies reflects real-world professional environments and prepares students for careers in data-driven sustainability fields.

Data Visualization Tools

Power BI / Tableau for creating dashboards and visual storytelling (based on Prof. Maznyk's workshop)

Collaboration Platforms

Miro / MURAL for online collaboration and brainstorming in interdisciplinary teams

Survey & Feedback Tools

Google Forms & SurveyMonkey to design and analyze wellbeing surveys

Interactive Engagement

Mentimeter / Kahoot for interactive engagement and live feedback during sessions

Assessment Strategy

Team Project

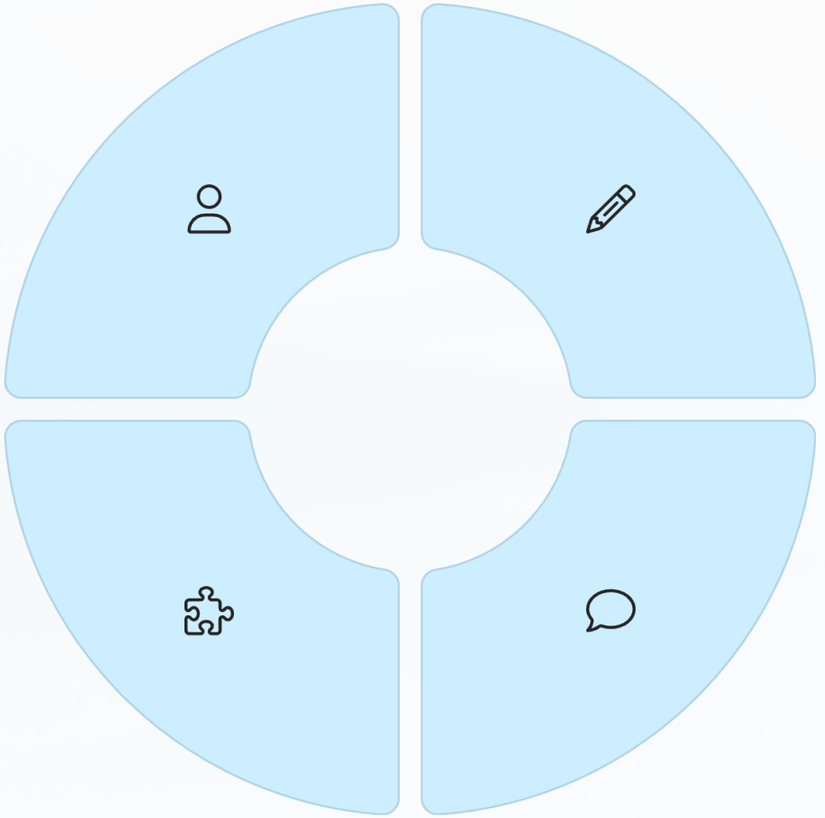
40% of final grade

- Collaborative design of a smart solution for a real-world sustainability problem
- Examples: Attracting investment in sustainable food sectors or improving HR practices with analytics
- Deliverables: Executive summary, dashboard/prototype, 10-minute pitch

Final Simulation Exercise

20% of final grade

- Active participation in a scenario-based simulation
- Example: Responding to a socio-economic shock using resilience strategies
- Demonstration of integrated course knowledge



Reflection Essay

20% of final grade

- Analysis of one core topic (e.g., resilience, CSR, data ethics)
- Reflection on its application in student's field of study
- Critical engagement with course concepts and personal learning journey

Participation & Peer Review

20% of final grade

- Based on contribution to group work
- Active engagement in discussions
- Meaningful participation in workshops
- Constructive feedback to peers

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Team Project Spotlight

The team project represents the cornerstone of the course assessment (40% of final grade), challenging students to apply theoretical knowledge to practical sustainability challenges. Working in interdisciplinary teams, students will identify a real-world problem and develop a comprehensive, data-driven solution.

Problem Identification

Teams select a sustainability challenge from business, policy, or healthcare sectors

Research & Analysis

Gather data, analyze stakeholder needs, and identify potential intervention points

Solution Development

Design a smart, scalable solution using appropriate technologies and frameworks

Presentation & Deliverables

Create executive summary, prototype/dashboard, and deliver a compelling pitch

Example Project Topics:

- Sustainable investment strategies for local food systems
- Data-driven HR practices to improve employee wellbeing
- Resilience planning for healthcare systems facing climate challenges
- Smart city solutions for resource conservation
- Ethical AI implementation in public service delivery

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Simulation & Scenario Planning

The course features immersive simulation exercises that challenge students to apply resilience strategies in response to complex socio-economic scenarios. These exercises develop critical thinking, adaptive decision-making, and collaborative problem-solving skills in high-pressure situations.

Crisis Scenario

Students are presented with a detailed scenario involving a sustainability crisis (e.g., supply chain disruption, resource shortage, public health emergency)

Role Assignment

Participants assume different stakeholder roles (business leaders, policy makers, community representatives) with specific constraints and objectives

Strategy Development

Teams analyze available data, identify intervention points, and develop resilience strategies under time pressure

Implementation & Feedback

Solutions are implemented in the simulation with real-time feedback on outcomes and unintended consequences

Reflection & Analysis

Facilitated discussion on decision-making processes, effectiveness of strategies, and lessons for real-world application

Course Benefits & Outcomes

Knowledge & Skills Development

Upon completing this course, students will possess a comprehensive understanding of sustainability challenges across sectors and the tools to address them. The interdisciplinary approach ensures graduates can work effectively across traditional boundaries to implement holistic solutions.

The combination of theoretical frameworks and practical application prepares students for leadership roles in sustainability-focused organizations, where they can drive meaningful change through data-informed decision-making and collaborative innovation.

Interdisciplinary Expertise

Ability to integrate insights from business, policy, data science, and public health to address complex sustainability challenges

Technical Proficiency

Hands-on experience with industry-standard tools for data visualization, collaboration, and analysis

Problem-Solving Capabilities

Advanced skills in identifying, analyzing, and developing solutions for real-world sustainability problems

Professional Readiness

Portfolio of work demonstrating ability to design and implement smart solutions for sustainable societies

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