

PU 200: AI Governance and Practical Use in Chemistry

Course Description:

This course introduces participants to the intersection of artificial intelligence and the chemical industry, with a focus on both governance and practical application. The first half of the course covers AI governance essentials — including ethical considerations, bias, data privacy, and the current regulatory landscape. The second half shifts to hands-on experience, guiding participants through real AI tools and a mini-project simulating AI-driven optimization in polyurethane production. The course concludes with a forward-looking discussion on AI trends and emerging career opportunities in chemistry.

AI Governance

- Introduction
 - Welcome, course overview, and objectives
- Understanding AI Governance
 - Definition and importance of AI governance
 - Key principles and frameworks
- Ethical Considerations
 - Privacy, consent, and ethical data use
 - Addressing bias and fairness in AI
- Regulatory Landscape
 - Overview of current regulations and standards
 - Compliance requirements for AI applications

Hands-on AI Use in Chemistry and Polyurethanes

- Introduction to AI Tools
 - Overview of popular AI tools and platforms.
 - Brief demo of a simple AI tool (e.g., Google's Teachable Machine)
- Hands-On Mini-Project: AI in Polyurethane Production
 - Participants use an online tool or platform (like RunwayML or Hugging Face Spaces) to simulate an AI application in polyurethane production.
 - Example project: Using AI to optimize a polyurethane formulation for specific properties (e.g., flexibility, durability).
 - Step-by-step guidance through the process.
- Review and Future Outlook
 - Recap of key points from the session.
 - Overview of future trends in AI and potential career paths in the chemical industry.