Causal Discovery from Observational Data Training Course

Professional Development Training Course Outline

Category	Research and Data Analysis	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Understanding and researching sensitive topics—such as mental health, gender-based violence, trauma, or socio-political injustices—requires not only technical research skills but also emotional intelligence, ethical considerations, and culturally responsive methodologies. Causal Discovery from Observational Data Training Course provides advanced training in conducting ethically sound and methodologically robust research on sensitive issues, with a special focus on using causal discovery from observational data. Through this program, researchers will gain deep insights into hidden causal relationships without conducting controlled experiments—critical in contexts where intervention is impossible or unethical.

This comprehensive, hands-on course integrates qualitative sensitivity with quantitative causal inference, emphasizing data-driven decision-making, machine learning, Bayesian networks, and ethical research design. Participants will learn to extract causal relationships, validate models, and implement evidence-based solutions in complex and sensitive domains such as healthcare, social justice, human rights, and public policy. By the end of this course, learners will be empowered to uncover truth responsibly, even in challenging environments.

Programme Curriculum

Causal Discovery from Observational Data Training Course

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Course Objectives

1. Understand core principles of ethical research in sensitive contexts.
2. Gain expertise in causal inference using observational data.
3. Design sensitive research instruments that respect participant well-being.
4. Apply Bayesian networks and graphical models for causal discovery.
5. Learn data anonymization and privacy-preserving techniques.
6. Navigate IRB approval processes and ethical dilemmas.
7. Use machine learning to support causal discovery.
8. Build structural causal models (SCM) for real-world problems.
9. Conduct bias-aware data analysis in sensitive settings.
10. Identify latent variables affecting outcomes in human-centered research.
11. Explore case studies of trauma-informed and participatory research.
12. Develop actionable insights from counterfactual reasoning.
13. Present research findings using responsible storytelling and data visualization.

Target Audience

1. Academic Researchers
2. Policy Analysts
3. Social Scientists
4. Public Health Researchers
5. NGO and Human Rights Professionals
6. Data Scientists in Social Impact
7. Graduate Students in Social or Health Sciences
8. Research Ethics Committee Members

Course Duration: 5 days

Course Modules

Module 1: Foundations of Sensitive Research Design

- Defining sensitivity in research contexts
- Types of sensitive topics (e.g., trauma, abuse, stigma)
- Building ethical research frameworks
- Participant vulnerability and informed consent
- Minimizing harm and managing emotional risks
- **Case Study:** Gender-based violence study in refugee camps

Module 2: Introduction to Causal Discovery

- Observational vs. experimental data
- Basic concepts of causality
- Identifying confounders and mediators
- Introduction to causal graphs and DAGs

- Common pitfalls in causal inference
- **Case Study:** Smoking and lung cancer causation

Module 3: Research Ethics and IRB Protocols

- Ethical review processes and IRB submissions
- Managing high-risk interviews
- Anonymity, confidentiality, and data protection
- Researcher safety in fieldwork
- Engaging communities ethically
- **Case Study:** IRB process in mental health research

Module 4: Graphical Models & Structural Causal Models (SCM)

- Creating directed acyclic graphs (DAGs)
- Using d-separation and backdoor criteria
- SCMs in social and health sciences
- Modeling interventions and treatments
- Integrating expert knowledge with data
- **Case Study:** SCM in education outcome disparities

Module 5: Machine Learning for Causal Inference

- Overview of ML methods for observational data
- Causal forests and targeted maximum likelihood estimation (TMLE)
- Propensity score matching and balancing
- Sensitivity analysis using ML tools
- Tools: DoWhy, CausalNex, EconML
- **Case Study:** Predicting treatment effects in health interventions

Module 6: Qualitative Integration with Causal Discovery

- Role of interviews and narratives in causal research
- Mixed methods integration strategy
- Coding sensitive qualitative data
- Building causal chains from narratives
- Triangulation and theory-based causal paths
- **Case Study:** Causal pathways in post-conflict trauma recovery

Module 7: Reporting & Storytelling in Sensitive Research

- Data visualization of sensitive information
- Ethical communication and public reporting
- Addressing misinterpretation risks
- Communicating uncertainty in findings
- Using infographics for policy influence
- **Case Study:** Storytelling HIV stigma research findings

Module 8: Real-World Application Lab & Final Project

- Identifying real datasets with sensitive contexts
- Formulating causal questions
- Hands-on analysis using Python or R
- Peer reviews and feedback sessions
- Presentation of causal models and ethical implications
- **Case Study:** Final project on domestic violence intervention impact

Training Methodology

- Interactive expert-led sessions with real-world cases
- Ethical scenario role plays and simulations
- Tool-based hands-on labs (Python, R, CausalNex, DoWhy)
- Group discussions and participatory learning
- Mentored project-based learning with feedback

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com