Fundamentals of Research Design in Mental Health Studies

Organizer(s)	Dr. Sandra Vieira, DP-CHUV
	1 ECTS
Summary	This course offers a practical introduction to research design and methodology in mental health sciences. Students will learn the core characteristics, appropriate uses, common biases and main analytical approach of major study designs—including cross-sectional, case–control, cohort, randomised controlled trials, and systematic reviews/meta-analyses. The course does not cover statistical methods; instead, it provides a high-level intuition of the typical analytical approaches associated with each design. Emphasis is placed on selecting the right design for a research question and understanding the strengths, limitations, and methodological implications of each design. The final session focuses on critical appraisal, equipping students with structured tools to evaluate the quality of manuscripts using the designs covered in the course.
Course level	Intermediate; no pre-requirements

Course dates

Session 1: 15 October 2026, 14:30–16:00
Session 2: 22 October 2026, 14:30–16:00
Session 3: 29 October 2026, 14:30–16:00
Session 4: 5 November 2026, 14:30–16:00
Session 5: 12 November 2026, 14:30–16:00
Session 6: 19 November 2026, 14:30–16:00
Session 7: 26 November 2026, 14:30–16:00

The course will take place online. Link will be communicated to registered participants.

Content of course sessions

Session 1: Introduction to the Course & Overview of Research Designs
- Overview of major study designs used in mental health research
- Core methodological concepts: temporality, sampling, sources of bias
- Choosing the right design to answer a specific research question

Session 2: Cross-sectional Designs
- Main characteristics: measurement of exposures and outcomes at a single time point
- When to use (and not): appropriate for describing patterns; not for establishing temporality
- Vulnerability to biases: measurement error, selection bias, reverse causation

- Strengths and limitations: quick, inexpensive, good for hypothesis generation but poor for causal inference
- Main analytical approach: correlations, group comparisons, regression models without temporal assumptions

Session 3: Case–Control Designs
- Main characteristics: participants selected based on outcome status and compared retrospectively
- When to use (and not): suitable for rare outcomes; not ideal when exposure is hard to recall
- Vulnerability to biases: recall bias, selection bias, misclassification of exposure
- Strengths and limitations: efficient and inexpensive; cannot directly measure incidence or risk
- Main analytical approach: odds ratios from logistic regression

Session 4: Cohort Designs
- Main characteristics: follow individuals over time to observe outcome occurrence
- When to use (and not): ideal for studying temporal order and risk factors; not suitable when follow-up is unfeasible
- Vulnerability to biases: attrition, missing data, time-varying confounding
- Strengths and limitations: strong for temporal inference; costly and time-consuming
- Main analytical approach: survival analysis, longitudinal models, risk estimation

Session 5: Randomised Controlled Trials (RCTs)
- Main characteristics: random assignment to intervention vs control conditions
- When to use (and not): best for testing interventions; not feasible when randomisation is unethical or impractical
- Vulnerability to biases: non-adherence, unblinding, incomplete outcome data
- Strengths and limitations: highest internal validity; limited generalisability and ethical constraints in mental health
- Main analytical approach: intention-to-treat analysis, comparison of mean/relative effects

Session 6: Systematic Reviews and Meta-analysis
- Main characteristics: structured synthesis of all available evidence, quantitative pooling when appropriate
- When to use (and not): ideal when multiple studies exist; not useful when evidence is sparse or highly heterogeneous
- Vulnerability to biases: publication bias, poor study quality, heterogeneity
Strengths and limitations: comprehensive and transparent; dependent on quality of included studies
- Main analytical approach: effect size pooling, heterogeneity tests, sensitivity analyses

Session 7: Critical Appraisal
- How to critically evaluate a scientific manuscript in psychiatric research
- Main tools to guide appraisal according to the study design

Course materials	Can be found here: - "https://moodle2.unil.ch" - log in with your institutional address (unil, chuv, epfl) - click on "Faculté de Biologie et de Médecine" > "Ecole doctorale / doctoral school" > "Lemanic Neuroscience Doctoral School" - course materials and papers will be stored under "Research Design in Mental Health Studies"
Evaluation	Participation in all course sessions is mandatory for credit validation. Students must also take part in all practical activities during the lectures. Each week, students will be asked to prepare for the practical session by reading 1–2 assigned papers.
Registration	The course is limited to 15 participants. Register until 1st September 2026 by writing a mail to lndscourses@gmail.com (with your supervisor in copy) and stating the course title as subject.