



# **Statistical Analysis for Scientific Research Training Course**

24 – 28 January 2027  
Langkawi

## Statistical Analysis for Scientific Research Training Course

**Ref:** 871\_165813 **Date:** 24 – 28 January 2027 **Location:** Langkawi **Fees:** 6000 Euro

### Overview

Statistical Analysis for Scientific Research Training Course is a one-week course for researchers, analysts, technical specialists, and research managers who leave with a Statistical Research Analysis Plan. Participants connect research questions, variables, sampling, descriptive summaries, confidence intervals, hypothesis tests, effect sizes, regression, assumption checks, and reproducible reporting. The course resolves method-selection and interpretation gaps by linking each analysis to the study question and evidence limits. Agile Leaders Training Center develops statistical research analysis practice.

### Who Should Attend

- Research functions responsible for quantitative study questions, designs, and analysis decisions
- Analysis functions responsible for preparing, summarizing, and modeling research data
- Technical functions responsible for interpreting statistical evidence within specialist studies
- Management functions responsible for reviewing analysis plans and research findings
- Reporting functions responsible for transparent statistical methods and results

The course assumes participants use tabular research data and basic numerical summaries; it leaves out qualitative analysis, advanced mathematical statistics, software programming, and discipline-specific experimental procedures.

### Departments and Industries

The course supports departments and industries that design, analyze, review, or report quantitative studies.



- Research and development, policy analysis, monitoring, and evaluation functions
- Healthcare, education, environmental, and social research organizations
- Engineering, technology, manufacturing, and laboratory research teams
- Universities, consultancies, public services, and nonprofit research units

## Learning Objectives

By the end of this course, participants will be able to:

- Build a statistical analysis plan from research questions and variables.
- Analyze distributions, missing data, samples, and descriptive summaries.
- Apply confidence intervals and hypothesis tests with assumption checks.
- Evaluate effect sizes, uncertainty, and practical interpretation.
- Build and diagnose regression models for research questions.
- Prioritize reproducible analysis and transparent reporting actions.



## **Course Agenda**

### **Day 1: Frame the Analysis Plan**

- Research Question and Estimand Mapping Canvas
- Outcome, Predictor, and Covariate Definition Sheet
- Variable Type and Measurement Scale Matrix
- Sampling Design and Analysis Population Record
- Statistical Research Analysis Plan Structure

### **Day 2: Prepare and Describe Data**

- Data Structure and Coding Dictionary
- Missing Data Pattern and Decision Log
- Distribution Shape and Outlier Diagnostic
- Central Tendency and Dispersion Selection
- Descriptive Table and Visualization Blueprint



### **Day 3: Estimate and Test Effects**

- Confidence Interval and Precision Interpretation
- Null and Alternative Hypothesis Decision Map
- Test Selection and Assumption Checklist
- Effect Size and Practical Relevance Table
- Multiplicity and Error Control Register

### **Day 4: Model and Report Evidence**

- Correlation and Association Evidence Matrix
- Linear Regression Specification Worksheet
- Residual and Model Assumption Diagnostic
- Sensitivity Analysis and Robustness Record
- Reproducible Results and Reporting Checklist

### **Day 5: Practice Research Analysis**

- Exercise: Translate Questions into Analysis Decisions
- Exercise: Diagnose Distributions and Missing Data
- Exercise: Interpret Intervals, Tests, and Effect Sizes
- Exercise: Review Regression and Sensitivity Evidence
- Capstone: Statistical Research Analysis Plan



## Practical Exercises

The course uses suggested activities based on health, education, engineering, and environmental research cases.

- Suggested activity: map a research question to variables, estimands, populations, and analysis choices.
- Suggested activity: profile a dataset and document missing values, distributions, and outlier decisions.
- Suggested activity: compare test results with effect sizes and confidence intervals.
- Suggested activity: audit a regression output and create a reproducible results record.

## FAQs

### **Who suits statistical analysis for scientific research training, and what does it assume?**

Research, analysis, technical, management, and reporting functions suit the training. It assumes basic work with tabular data and numerical summaries.

### **How does statistical analysis for scientific research differ from research methods training?**

Statistical analysis training focuses on data structures, estimation, tests, effect sizes, models, diagnostics, and interpretation, while research methods training covers the wider design and conduct of a study.

### **Why should scientific research report effect sizes and confidence intervals?**

Effect sizes describe the magnitude of a finding, while confidence intervals show its precision and plausible range; together they support interpretation beyond a significance threshold.

### **How are statistical tests selected for scientific research?**

Tests are selected from the research question, outcome and predictor types, sampling structure, dependence, distribution, and assumptions, with alternatives documented when conditions are not met.



## **What makes statistical analysis for scientific research reproducible?**

Reproducible analysis records data definitions, transformations, exclusions, methods, assumptions, model specifications, outputs, and decisions so another analyst can trace and repeat the process.

## **Conclusion**

Participants take back a Statistical Research Analysis Plan containing question mappings, variable definitions, sampling decisions, descriptive methods, inference choices, effect measures, regression specifications, diagnostics, and reporting controls. It changes disconnected statistical procedures into a traceable research workflow. The plan supports defensible method choices, transparent interpretation, and reproducible evidence reporting.