Advanced Tidyverse in R Training Course

Professional Development Training Course Outline

Category	Research and Data Analysis	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Advanced Tidyverse in R Training Course is meticulously designed for data enthusiasts, analysts, and data scientists aiming to master the tidyverse ecosystem and accelerate their data manipulation, visualization, and analysis skills. This course empowers professionals to harness dplyr, ggplot2, tidyr, purrr, and stringr to efficiently transform complex datasets into actionable insights. Participants will explore advanced data wrangling, functional programming, performance optimization, and reproducible analysis workflows, enabling them to tackle large-scale datasets and implement best practices in R programming.

Through a blend of hands-on exercises, real-world case studies, and project-based learning, this course ensures participants not only learn advanced techniques but also apply them to solve business-critical problems. The training emphasizes data storytelling, automation, pipeline creation, and interactive visualization, equipping learners with the ability to create robust, scalable, and reproducible analytical solutions. By the end of the course, participants will confidently manipulate, visualize, and analyze data with efficiency and precision, making them indispensable assets to their organizations.

Programme Curriculum

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Course Duration

10 days

Course Objectives

1. Master advanced data manipulation using dplyr and tidyr for complex datasets.
2. Implement functional programming in R using purrr for scalable workflows.
3. Develop interactive visualizations with ggplot2 and ggthemes.
4. Build reproducible data pipelines using tidyverse principles.
5. Optimize R code performance for large-scale data analysis.
6. Clean and preprocess unstructured data using stringr, readr, and lubridate.
7. Automate repetitive data tasks with advanced R scripting techniques.
8. Conduct statistical analysis and hypothesis testing using tidyverse tools.
9. Integrate tidyverse with other R packages for comprehensive analytics.
10. Create dynamic reports with R Markdown and Shiny.
11. Apply data storytelling principles for effective business insights.
12. Implement best practices in version control and collaborative data projects.
13. Solve real-world case studies to bridge theory with practical application.

Target Audience

1. Data Analysts looking to upskill in R.
2. Data Scientists aiming for advanced tidyverse proficiency.
3. Business Analysts seeking efficient data transformation techniques.
4. R Programmers looking to improve code efficiency and reproducibility.
5. Statistical Analysts handling large datasets.
6. Researchers requiring robust data wrangling and visualization skills.
7. Decision-makers who want to leverage **data-driven insights**.
8. Students and professionals in analytics, data science, or research domains.

Course Modules

Module 1: Advanced Data Manipulation with dplyr

- Filtering, selecting, and arranging large datasets efficiently.
- Summarizing and aggregating data for actionable insights.
- Working with **grouped operations** and window functions.
- Case Study: Sales dataset aggregation and regional analysis.
- Optimizing dplyr pipelines for performance.

Module 2: Reshaping Data with tidyr

- Pivoting, unpivoting, and restructuring complex data.
- Nesting and unnesting data for hierarchical analysis.

- Handling missing values and data imputation techniques.
- Case Study: Customer churn dataset transformation.
- Best practices for tidy data management.

Module 3: Functional Programming with purrr

- Mapping functions over lists, vectors, and data frames.
- Writing reusable functions for data workflows.
- Error handling and safe mapping strategies.
- Case Study: Survey dataset processing with purrr.
- Enhancing pipelines with functional programming.

Module 4: String Manipulation with stringr

- Regular expressions for advanced text processing.
- Cleaning and standardizing text data.
- Extracting, replacing, and splitting string data.
- Case Study: Social media sentiment text analysis.
- Integrating string manipulation in tidy workflows.

Module 5: Date-Time Handling with lubridate

- Parsing, formatting, and calculating date-time objects.
- Performing time-based aggregations.
- Handling time zones and daylight saving adjustments.
- Case Study: Financial transaction time-series analysis.
- Automating date-time calculations in pipelines.

Module 6: Advanced Visualization with ggplot2

- Customizing plots with themes and annotations.
- Creating multi-faceted and interactive plots.
- Visualizing complex data relationships.
- Case Study: Market trend analysis using ggplot2.
- Integrating ggplot2 with other tidyverse packages.

Module 7: Data Cleaning and Preprocessing

- Handling missing, duplicate, and inconsistent data.
- Feature engineering for analytical models.
- Normalization and scaling for performance.
- Case Study: E-commerce product dataset cleaning.
- Creating automated cleaning pipelines.

Module 8: Performance Optimization in R

- Profiling and benchmarking R code.
- Vectorization and efficient memory usage.
- Parallel computing with tidyverse.
- Case Study: Large-scale survey dataset optimization.
- Improving pipeline speed and efficiency.

Module 9: Tidy Data Principles

- Structuring datasets for maximum analytical efficiency.
- Principles of tidy data for reproducible analysis.
- Integrating multiple datasets seamlessly.
- Case Study: Healthcare dataset tidying.
- Best practices for collaborative projects.

Module 10: Integrating R with External Data Sources

- Connecting to databases and APIs.
- Importing and exporting data efficiently.
- Automating data refresh pipelines.
- Case Study: Real-time stock market data integration.
- Handling JSON, CSV, and Excel data.

Module 11: Reporting and Automation with R Markdown

- Creating dynamic reports and dashboards.
- Embedding visualizations and tables in reports.
- Automating repetitive reporting tasks.
- Case Study: Monthly sales performance report.
- Version control integration with Git.

Module 12: Interactive Dashboards with Shiny

- Building responsive and interactive applications.
- Linking plots, tables, and inputs for real-time analysis.
- Deploying dashboards for stakeholders.
- Case Study: HR analytics dashboard.
- Best practices for scalable Shiny apps.

Module 13: Statistical Analysis using Tidyverse

- Regression, ANOVA, and correlation analysis.
- Exploratory data analysis with tidy principles.
- Hypothesis testing workflows.
- Case Study: Clinical trial dataset analysis.
- Visualizing statistical results efficiently.

Module 14: Data Storytelling and Communication

- Crafting compelling narratives from data insights.
- Integrating visualizations into business presentations.
- Techniques for audience-centric communication.
- Case Study: Marketing campaign performance story.
- Using dashboards to tell data-driven stories.

Module 15: Advanced Project-Based Learning

- Real-world dataset integration and analysis.
- Building end-to-end tidyverse pipelines.

- Collaborative coding practices.
- Case Study: E-commerce analytics and recommendation system.
- Presentation of insights and actionable recommendations.

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

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	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

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