

Advanced R Programming

Download Whitepaper: Accelerate Your Modernization Efforts with a Cloud-Native Strategy
Get Your Free Copy Now

Course Number: ACCEL-R-ADV

Duration: 4 days

Overview

Course Description

Ascendient Learning's Advanced R course teaches students more sophisticated R skills, including using advanced regular expressions, machine learning, random effects modeling, Bayesian Inference, advanced R time series, and much more.

Important Note: We have listed more topics here than could be covered in 4 days and we would tailor the selection of topics covered to your specific needs. Please [contact us](#) for a quote and to arrange a discussion with one of our senior R instructors about customizing this class to your experience and goals.

Skills Gained

- Use advanced regular expressions in R
- Apply advanced missing data techniques
- Work with advanced R time series
- Use data.table for big data
- Work with linear models

- Extend R to time to event and survival analyses
- Work with Bayesian Inference using R

Prerequisites

All students should have attended Ascendient Learning's [Introduction to R Programming](#) course, or have equivalent knowledge.

Training Materials

All Advanced R training students receive comprehensive courseware.

Software Requirements

- A recent release of R 4.x
- IDE or text editor of your choice (RStudio recommended)

Audience

Course Details

Outline

- Advanced Regular Expressions in R
 - Using Perl-Style Regular Expressions in R
- Machine Learning Approaches in R
 - Pre-processing Data
 - Feature Selection
 - Supervised Learning:
 - Classification Models
 - Regression Models
 - Unsupervised Learning:
 - Clustering
- Advanced Missing Data Techniques
 - Understanding the different types of Missing Data
 - Implications for Analysis
 - The AMELIA package
 - Multiple Imputation

- Advanced R Time Series
 - The ts class
 - The zoo package
 - The xts class
 - Lubridate for advanced date handling
 - Autocorrelation Plots
 - Seasonal, trend, and noise plots
 - Financial Charting with R
- Using data.table for Big Data
 - Why do we need data.table?
 - Why is it
 - The i and the j arguments in data.table
 - Merging data with data.table
 - Group-by functions with data.table
 - Using data.table in functions
- Generalized Linear Models
 - Logistic Regression
 - Poisson Regression
 - Gamma Regression
- Extend R to Time to Event or Survival Analyses
 - Visualizing Hazards Across Time
 - Understanding the Log Rank Test
 - Cox Proportional Hazards Modeling
 - Understand Time Varying Covariates
 - Understand Time Dependent Covariates
 - Understanding the Hazard Ratio
 - Implement Frailty Models for Clustered Data
 - Parametric Survival Models
 - Weibull Model
 - Exponential Model
 - Predicting Failure Times

- Random Effects Modeling in Linear Regression
 - Random effects introduction
 - Covariance structures
 - Interpreting random effects in models
 - Longitudinal Data
 - Clustered Data
 - Prediction in Random Effects
- Extension: Random Effects Modeling in Logistic Regression
 - Random effects introduction
 - Covariance structures
 - Interpreting random effects in models
 - Marginal versus Conditional Models
 - Stratified Logistic regression
 - GEE Models in Logistic Regression
- Bayesian Inference Using R
 - Linear model
 - Logistic Model
 - Random Effects / Fixed effects model