**Chapter 1: Introduction to Time Series Data**

* *Lesson 1.1: What is Time Series Data*
  + Learning Objective: Learner will be able to understand why TS-data is needed in real-world analyses, how TS-data differs from non-temporal data, as well as what can be gained by performing TS analysis
* *Lesson 1.2: How to Interpret Time Series Data*
  + LO: Learner will understand how to interpret a basic time series plot
  + – Learner will understand the difference between stationary and non-stationary data, and how the following differ between the two:
    - Mean,
    - Variance,
    - Covariance/Autocorrelation
* *Lesson 1.3: Components of Time Series Data*
  + – Learner will be able to understand the three primary components of TS-data: Trend, Seasonality, and Random components
  + – Learners will learn the difference between an “additive” and “multiplicative” model
  + – Learner will be able to interpret a “season plot”

**Chapter 2: Manipulating Time Series Data**

* *Lesson 2.1: Creating a time series with* ***ts()***
  + LO: Learners will be able to read in data from a dataframe or tibble, and convert it into an object of class “ts” with the ts() function
  + – Learners will be able to understand what properties a *ts* object has, including:
    - Equi-spaced observations in time (i.e., equal, regular sampling intervals)
    - Attributes like frequency, start, and end.
* *Lesson 2.2: Quantifying a Time Series*
  + LO: Learners will be able to perform the Dickey-Fuller test to determine if a time series is stationary or non-stationary
    - adf.test from the
  + LO: Learners will learn about the *print* and *plot* methods in R
    - forecast::autoplot
* *Lesson 2.3: Decomposing a Time Series*
  + LO: Learners will be able to decompose a time series with the `decompose` and `stl` functions, and be able to plot and interpret the results.
  + – Learners will be able to adjust for the seasonality in the data with forecast::seasadj().