**STT 811**

**In-Class Assignment 19**

1. For the airline passengers dataset
   1. Import the data

airline <- read.csv("data/passenger.csv.csv")

* 1. Convert it into a time series

airline\_ts <- ts(airline$time, frequency = 12, c(1949,1))

* 1. Create the autocorrelation and partial autocorrelation panels. Comment on how the seasonality is observed

acf(airline\_ts)

pacf(airline\_ts)

Chart

Description automatically generated Chart, line chart

Description automatically generated

* 1. Perform a decomposition of the time series, trying both additive and multiplicative. Which one “looks” better?

1. For the oil gas dataset
   1. Import the data

oilgas <- read.csv("data/oil-gas.csv")

* 1. Convert the oil and gas data into 2 separate time series (what is the seasonality frequency?)

oilgas <- read.csv("data/oil-gas.csv")

oil\_ts\_week <- ts(oilgas$Date, frequency = 52, c(2013,1))

oil\_ts\_yr <- ts(oilgas$Date, frequency = 12, c(2013,4))

* 1. Perform a decomposition on the oil data. How strong is the seasonality?
  2. Create a scatterplot of gas vs. oil (oil on x axis). How correlated are they?