1. **Study Forecast** - what and why for study.
2. **Data Description**
   1. The Data used for our analysis is the Weekly hours from \_\_\_\_\_\_. The start date is \_\_\_\_ and end date is \_\_\_\_ with a frequency of \_\_\_\_\_\_\_\_. The data is \_\_\_\_ over time.
3. **Data Plot**

**Chart, line chart

Description automatically generated**

1. **Remover Trends/Seasonality?**
   1. Tools to dx =
      1. Augmented Dicky Fuller, “and with a p-value > .05 we fail to reject the null hypothesis of non-stationarity.
   2. Tools to make stationary
      1. First Differences.
      2. Log
      3. First Differences and Log

C. Plot to demonstrate stationarity. First order/Log/First Order + Log differenced \_\_\_\_\_\_\_\_.

**5. Estimated ACF & PACF**

a. Plot + describe/rationale how works, “*Both ACF and PACF plots are decaying and fail to cut at a finite value. This suggests the process has both an AR and an MA component.*

b. Q-Test to verify white-noise.

c. Histogram of residuals with a normal distribution

1. **Model Selection and Validation** 
   1. Results– table in accordance with Table 8.2 (text pp. 214)
   2. Inverted roots of AR and MA terms. The visualization of inverted roots shows that all of the inverse roots lie within the unit circle, confirming that the model is both stationary and invertible.

Chart

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Chart

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Description automatically generated

*“The plots above of residuals for our model show the residuals to be nearly normal and following a white noise process? This is indicative that there are no patterns in our residuals that should have been captured by our model.”*

1. *6 month (h = 6) forecast.*
2. *Plot multistep of forecasts and CI bands for each specification and comment on preferred model.*