Thesis Outline

1. *Introduction* Why is this work needed, where does it fit in the grand scheme of causality studies, what exactly is the goal, what is not the goal, etc.?
2. *Causality Studies* Literature review. This taxonomy will not be complete, nor will the boundaries be clean. Several authors, particularly in theoretical physics, blur boundaries, e.g., between science and philosophy.
   (a) *Foundational Causality*
      i. *Philosophical Studies* Aristole, Hume, ..., Good, Suppes
      ii. *Natural Science Studies* causality in physics, etc.
      iii. *Pyschological Studies* perceptions of causality
   (b) *Phenomenal Causality*
      i. *Statistical Causality* Fisher, Dawid, Rubin, Pearson, ...
      ii. *Data Causality* Pearl, Kleinberg, ...
      iii. *Time Series Causality* This is just an explanation of where these techniques fit in the taxonomy. In-depth descriptions are the next chapter.
3. *Time Series Causality* Introduction and (brief) exploration of the five main classes of times series causality techniques
   (a) *Granger Causality*
   (b) *Transfer Entropy*
   (c) *State Space Reconstruction Causality*
   (d) *Lagged Cross-Correlation*
   (e) *Penchants and Leanings*
4. *Exploratory Causal Analysis* Applying the time series causality tools
   (a) *Synthetic data examples*
   (b) *Empirical data example*
5. *Conclusions* Future work, etc.