The aim of this assignment is to get familiar with some important topics in real analysis, measure theory and stochastic process.

1. From real analysis you should know what is topological and metric space and their important properties. Refer to chapter 2 of [1] if needed. For example you might need to know the difference between closed set and open sets or definition of continuity.

2. You should read Appendix A, B1 and B2 from [2] which is about measure and probability theory. Main topics you should know are different kinds of fields, definition of measure, measure space, measurable function and random variable.

3. By doing first and second part it is easy to learn what is stochastic process. Read chapter 1 of Shazili lecture notes which is short but informative. Then read Wikipedia page of Kolmogrov Extension Theorem to learn conditions of well defined stochastic process.

(Suggestion: First do second and third part and then complete your knowledge by refering to Pugh book)

References
