

# 1 Lesson Plan

## 1. Introduction

- (a) introductions (students and instructor)
- (b) course content
- (c) learning outcomes
- (d) assessment
- (e) be professional
- (f) communication is hard
- (g) be open to admit not to know, but express desire to find out
- (h) Principle:
  - each student will be assigned a research project/client
  - instructor and students are the consulting team
  - each student is responsible for communicating with their client, conducting the relevant analyses, and writing a final report providing the statistical methods and results
  - the team will support each other and brainstorm together as required

Preparation for consultation covers the following topics

- scientific method
- role of consultant
- ethics
- communication (will revisit again and again)
- statistics crisis
- technical aspects

Assignment 1 (ethics)

- 2. (a) list of projects  
provide details
- (b) Scientific Method  
include sub-group discussions:  
What makes planning essential?  
Why do we plan statistical analysis in Planning Stage?  
What might cause the different back steps?  
What could be the role of a statistician during data collection stage?  
...
- (c) Role of consultant

Assignment 2 (scientific method)

- 3. (a) list of projects  
provide more details  
request emails stating preferences

- (b) More on Scientific Method (sub-group discussions)
- (c) Role of consultant
- (d) In statistics: Concept of interaction
- (e) In statistics: P-value/statistics crisis (prep assignment)

Assignment 3 (scientific method, example for interaction)

4. (a) project matches
  - (b) Communication 1
    - first meeting (document, video(resisting client))
    - first email

Assignment 4 (communication (write email inviting client))

5. (a) Communication 2 – writing reports (remember scientific method)
  - method section
  - result section
  - (b) APA style
  - (c) show examples,
  - (d) group work: provide output, students create write-up

Assignment 5 (case study (regression?))

6. (a) reproducibility (Rmarkdown, SPSS syntax files)
  - (b) Importance of initial data cleaning and data description
  - (c) data cleaning using tidyverse

Assignment 6 (tiny case study(maybe t-test + boxplot), clean data first, write Rcode and/or SPSS syntax file)

7. (a) Communication 3 – Data Description –Hans Rosling
  - (b) examples, potential sources (with R code):
    - What going on in this graph?
    - Master List
    - R Graph Gallery
    - GGplot Examples

- (c) ggplot (A Tutorial)

Assignment 7 (case study, include requirement for graph)

8. (a) update from students
  - (b) Communication (suitable video)
  - (c) Choosing a statistical tool (the key)
  - (d) Measuring effect size(Cohen's d, odds ratio, correlation coefficient, etc.)

Assignment 8 (case study) needed???

### **remaining sessions**

- (a) update from students
- (b) Communication (suitable video)
- (c) additional topics from statistics as needed or which are of interest (e.g. survival analysis, SEM, mediation analysis, measuring effect size)
- (d) also reiterate how to write Method and Result sections

No more assignments/ students should be working on the analysis and their reports.

Preferably after the reports are completed, students have to schedule meetings with their clients to explain results.

### **last session**

coffee, cookies and oral presentations by students reflecting on experience in consulting (not for marks)