










SQM Semester 1 (2022/23)

Syllabus

W	Topic	Lectures (1+1 h)	Workshop (1 h)	Readings	Formative (due Mon)	Formative (due Thu)	Summative	S4LR	R4DS	Intensity
1	Quantitative methods and uncertainty	Quantitative data analysis, uncertainty, subjectivity, descriptive stats, Open Research, New Statistics	Introduction to R and RStudio, Rmarkdown/ Quarto	<ul style="list-style-type: none"> - Darwin 2020 (pp1-5 top): positionality - Jafar 2018: positionality 				Ch 1	Ch 1, 2	
2	Data visualisation	Principles of data viz, types of variables	Plot with ggplot2	<ul style="list-style-type: none"> - Wickham 2010: GoG 	<ul style="list-style-type: none"> - FM1: Positionality statement (one paragraph) - Retrieving Syllabus (every week) 				Ch 3	
3	Linear models: Basics I	Linear model	Transform data, simulate data, lm() with continuous outcome and predictors	<ul style="list-style-type: none"> - Okasha 2006 (Ch 4) realism and antirealism 	FM2: Grammar of graphics analysis	FT1: Data viz		Ch 4	Ch 5	
4	Linear models: Basics II	Categorical predictors, coding (treatment, sum)	Read and summarise data, contrast coding, lm() with continuous outcome and categorical predictors	<ul style="list-style-type: none"> - Gelman 2017 (Sec 1-3): virtues beyond objectivity and subjectivity 	FM3: What are the consequences of realism vs antirealism on quantitative research? (one paragraph)			Ch 7	Ch 9, 10 and 11	
5	Linear models: Discrete outcomes	Binary and count outcomes	glm() with binary and count outcome, log-odds, logit	<ul style="list-style-type: none"> - Gibbons 1999: social contract 				Ch 12 and 13		
6	Catch-up week			<ul style="list-style-type: none"> - Crüwell 2019: Open Science - Glass 2008: hypothesis - Turing Way 	FM4: Interface of Gelman's "virtues" and Gibbon's "social contract" (one paragraph)	FT2: LM report				
7	Linear models: Basics III	Interactions, centering, standardisation	g/lm() with interactions, plotting interactions, scale()					Ch 8 and 5	Ch 12	
8	Linear models: Hierarchical data	Fixed and varying effects, pooling and shrinkage	g/lmer(), plotting varying effects					Ch 14 and 15		
9	Significance testing I	Statistical inference and NHST	Calculate p-values with lmerTest	<ul style="list-style-type: none"> - Gigerenzer 2004 (Sec 1-4): mindless statistics 		FT3	Release data for S1	Ch 9, 10 and 11		
10	Significance testing II	Alpha and beta, Type I/II/M/S errors	Power analysis					Ch 9, 10 and 11		
11										
12							S1: Data viz and modelling			