

Session	Time	Session Title and Content	Lead Tutor
Wednesday 17 April		Basic Principles	
	08.45-09.00	Registration	
1	09.00-09.30	Introduction to course: The Three Rs, legal and ethical aspects of Experimental Design.	MHS
2	09.30-10.00	Quiz 1	DF
	10.00-10.20	BREAK	
3	10.20-11.15	Principles of experimental design: types of experiment (pilot, exploratory, confirmatory), objectives, controls, experimental units, replication, randomization, blinding. (Including a short group exercise)	DF
4	11.15-12.00	Common failings: unclear objectives, bias, lack of power, failure to randomize/blind, pseudoreplication. Costs of poor design.	
	12.00-13.00	LUNCH	
5	13.00-14.00	Group Exercise 1: Controls, experimental units.	DF
6 *Online	14.00-14.45	Basic statistical inference: null and alternative hypotheses, SD vs. SE, outliers, type I & type II errors, variables affecting significance, summary statistics.	DL
	14.45-15.05	BREAK	
7	15.05-15.50	Sources of variability: in animal studies and how they may be controlled. Need for better design.	DF
8	15.50-16.50	Importance of controlling variability: simulating experiments and the importance of controlling variability. Randomisation, sampling, Type 1 and Type 2 errors.	MS
	19.00-21.00	DINNER	
Thursday 18 April		Experimental Designs and Statistical Analysis	
9	09.00-09.45	The analysis of variance: interactions, post-hoc tests, assumptions, data transformations.	MS
10	09.45-10.45	Group Exercise 2: Finding basic faults.	DF
	10.45-11.05	BREAK	
11	11.05-11.50	Different designs: completely randomised, randomised block and latin square designs. Power calculations, resource equation.	RP

12 *Online	11.50- 12.35	<i>Statistical power and design of aquaculture experiments: Getting the most certainty with the least fish.</i>	GD
	12.35- 13.35	LUNCH	
13	13.35- 14.20	Non-continuous data: qualitative data, contingency tables, non-parametric tests.	RP
14	14.20- 15.05	Factorial designs	MS
	15.05- 15.25	BREAK	
15	15.25- 16.25	Group Exercise 3: Choosing the right design & over-night exercise.	DF
16	16.25- 17.10	Experiments to test relationship: correlation, regression.	MS
	19.00- 21.00	DINNER	
Friday 19 April			
Friday 19 April		Applied Experimental Design and Important Design Messages	
17	09.00- 09.45	Tools and software: power analysis, EDA and the pros and cons of software.	MHS
18	09.45- 10.30	Discussion of overnight exercise. Presentation and planning: presenting results and planning an experimental programme.	DF
19	10.30- 11.15	Quiz 2 and discussion.	DF
	11.15- 11.35	BREAK	
20	11.35- 12.20	Ethics by design: Writing an experimental protocol, ethical review & 3Rs	KM
21 *Online	12.20- 13.00	PREPARE Guidelines	AS
22	13.00- 13.30	Searching and resources: searching for information on 3Rs and 3Rs resources	MHS
	13.30- 14.30	LUNCH	
23	14.30- 14.45	Answers to Quiz 2 & take-home messages.	DF
24	14.45- 16.00	Ask the experts: opportunity for participants to discuss any unresolved design problems with the tutors	DF/RP/ KM
Tuesday 23 April		FELASA Accreditation Examination	
25	10.00- 11.00	FELASA Examination ONLINE via Teams	MHS/KM

Tutors: Dr Michelle Hudson-Shore [MHS], Dr Derek Fry [DF], Dr David Lovell [DL], Prof. Kate Millar [KM], Dr Martin Sullivan [MS] and Prof. Adrian Smith [AS], Prof. Richard Preziosi [RP].
Guest Lecture: Dr Gareth Difford [GD].