

# **QUEEN MARY, UNIVERSITY OF LONDON**

**MAS 314**

**Design of Experiments**

**Assignment 1**

**For discussion on 16 January 2007**

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- 1** A professional apple-grower has written to you, making an appointment to discuss an experiment which he is proposing to conduct in the coming growing season. Part of his letter reads:

There is a new type of chemical spray available, which is supposed to make the apple flowers more attractive to bees. Since bees are essential for setting the fruit, I want to investigate these chemicals. Two manufacturers are selling the new sprays, under the trade names Buzz!! and Attractabee.

I propose dividing my orchard into three parts. I shall spray Attractabee onto one part, and Buzz!! onto the second part. The third part will be managed in the normal way, with none of these new sprays. I shall then see which part of the orchard does best.

Make notes on what you should discuss with him—and why!—at your meeting.

- 2** A psychology course has the 21 students shown below. The professor wants to use the students to test two new types of pill for keeping people awake, called Wakey-Wakey and Zizzaway. He has only six pills of Wakey-Wakey and five pills of Zizzaway. He plans to use 11 students. Each student will be shut alone in the observation room, swallow their allocated pill, and then follow a set programme of activities until they fall asleep. A hidden watcher will record when they swallow the pill and when they fall asleep.

Design the experiment for the professor, to the extent of giving him a plan allocating pills to students.

Name	Sex	Age	Name	Sex	Age	Name	Sex	Age
Adrian	M	19	Helen	F	20	Olivia	F	20
Belinda	F	20	Ingrid	F	20	Peter	M	20
Caroline	F	19	James	M	20	Quentin	M	27
David	M	20	Katherine	F	19	Ruth	F	20
Esther	F	28	Linda	F	28	Sarah	F	19
Fiona	F	20	Michael	M	20	Trixie	F	20
Gregory	M	19	Naomi	F	19	Ursula	F	20