

# Multi-Stratum Experiments

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This course will cover the design and analysis of split-plot, and more general multi-stratum, experiments. Applications with factors which are hard to change will motivate the general ideas. As well as standard multi-stratum structures, we will describe recent research in regular fractional factorial structures, robust product design, response surface designs and experiments with mixtures.

## Outline

1. **Standard multi-stratum structures:** randomization, blocking and strata; applications with factors which are hard to change, restrictions on randomization; model-based approaches; choice of design; combination of information.
2. **Regular fractional factorial structures:** fraction in top stratum; fraction in bottom stratum; graphical analyses for unreplicated designs; robust product experimentation; joint modelling of mean and dispersion; fractions in more than one stratum.
3. **Irregular fractional factorial structures:** multi-stratum response surface designs; experiments with mixtures; mixed models and REML/GLS analysis; other approaches to data analysis; randomized-not-reset factors.