Factorial ANOVA

- Two-way independent ANOVA compares several means when there are two independent variables and different entities have been used in all experimental conditions. For example, if you wanted to know whether different teaching methods worked better for different subjects, you could take students from four courses (Psychology, Geography, Management and Statistics) and assign them to either lecture-based or book-based teaching. The two variables are course and method of teaching. The outcome might be the end-of-year mark (as a percentage).

- You can test for homogeneity of variance using the table labelled *Levene's Test*: if the value in the column labelled *Sig.* is less than .05 then the assumption is violated.

- In the table labelled *Tests of Between-Subjects Effects*, look at the column labelled *Sig.* for all main effects and interactions; if the value is less than .05 then the effect is \significant.

- To interpret a significant interaction look at an interaction graph or conduct simple effects analysis.

- You don't need to interpret main effects if an interaction effect involving that variable is significant.

- If you do interpret main effects then consult *post hoc* tests to see which groups differ: significance is shown by values in the columns labelled *Sig.* smaller than .05, and bootstrap confidence intervals that do not contain zero.

- Test the same assumptions as for any linear model (see Chapter 5).