**Interactive Spreadsheet Workshop**

1. **Sales analysis**

Download and open the Excel file SalesData.xlsx from Moodle. Fill in the missing information highlighted in grey.

1. **Catering Invoice**

Download and open the Excel file CateringInvoice.xlsx from Moodle.

1. Click the “Menu Order (No Tax)” tab and fill in the “LINE TOTAL” column with the cost of each menu item of the invoice (i.e., unit price x quantity).
2. In cell D14 enter a formula that computes the total cost for all the menu items.
3. Now compute the total cost for all the menu items by using the “sumproduct” formula (place this in cell D16) and verify that you obtain the same result as in point (ii).
4. Click the “Menu Order” tab and enter a formula in cell D4 that multiplies the unit price in B4, the quantity in C4 and the tax rate in E2. Make sure you use an absolute cell reference for the tax rate!
5. Use the fill handle to copy the formula you just created to cells D5:D12. Note how the “LINE TOTAL” column is updated accordingly.
6. Click on the “Paper Goods” tab and fill in the columns “SALES TAX” and “LINE TOTAL” (use the same calculations as in the “Menu Order” worksheet).
7. Click the “Catering Invoice” tab and fill in cell C4 with a reference to the total cost of the menu order and cell C5 with a reference to the total cost of the paper goods. Note how these values are automatically updated if some data is changed in the other worksheets (e.g., try to change the tax rate to 6.5%).
8. Click on cell C4 and then press the key F2. Note how the reference to a cell in a different worksheet includes the name of the worksheet, followed by an exclamation mark, followed by the cell address.
9. **Production analysis**

Download and open the Excel file Production.xlsx from Moodle.

1. Convert each production amount in Column B into the nearest whole number (display the new values in Column C).
2. Use the IF formula to determine whether the production amount in any given period is greater than 10,000 units; output 1 if yes, 0 otherwise.
3. Determine the number of periods with production amounts greater than 10,000 units.
4. Produce the same result as steps (iii)-(iv) but using the COUNTIF formula.
5. Produce a column chart as well as a line chart of production (rounded values) across time. Which looks better in your opinion? Does one convey more information than another?
6. Determine the percentage of production volumes less than or equal to 10,000 units and the percentage greater than 10,000 units. Produce a pie chart to display these values.
7. Units, after they are produced, need to be sent by lorry to a distribution centre. Each lorry can transport up to 2,000 units. Determine the number of lorries needed for each production amount [Hint: the answer in each case should be a whole number that meets the total capacity of the lorries.]
8. **In-house vs outsourcing**

A firm installs 1500 air conditioners which need to be serviced every six months. The firm can hire a team from its logistics department at a fixed cost of £6,000. Each unit will be serviced by the team at £15.00. The firm can also outsource this at a cost of £17.00 inclusive of all charges.

1. For the given number of units, compute the total cost of servicing for both options. Which is a better decision? What is the difference in cost between the two options?
2. Use Goal Seek to find the break-even volume and characterize the range of volumes for which it is more economical to outsource.
3. Use the CONCATENATE function to displays the cost and the best option for any volume of air conditioners. For example, the message could be: “The cost of servicing X air conditioners is Y and the best option is to ACTION”, where X is the number of air conditioners, Y is the cost and ACTION is either “outsource” or “use in-house team”.
4. Plot the total cost of servicing for both options in an Excel chart to confirm your answer to part (ii) (Hint: first create a data table that shows the costs for different volume values).