The Science of Bread making
Basic ingredients

The basic ingredients of bread are:
• Flour;
• yeast (to make the bread rise);
• salt (to add taste and aid proving);
• fat (to make the loaf lighter and airier and extend its shelf life);
• water.

All white bread commercially sold in the UK is made with white flour fortified with calcium, iron and B vitamins. It is a legal requirement to fortify flour in the UK.
Almost all breads today are leavened, which means that a substance has been added to the dough to start fermentation and make it rise.

The most popular and widely known leavening ingredient is yeast.
Yeast is a micro-organism, one of the tiniest forms of life. The air around us is full of thousands of different kinds of yeast. If it is given warm, damp surroundings and starchy or sweet matter, it will start to multiply.

As the yeast multiplies, it turns starches and sugars to alcohol and produces carbon dioxide gas. It is this gas that adds the air into the dough, and makes it increase in size.

Yeast must be mixed with a warm liquid before adding it to flour. If the liquid is too cool, the yeast won't multiply; if it is too hot (over 43°C), the yeast will be killed.
Flour

Gluten is an important protein found in flour.

Gluten gives the dough softness, so that it can expand when the gas bubbles produced by the yeast form.

It also gives the dough strength so that the gas bubbles do not burst.
All mixtures made with yeast are prepared in several distinct stages:

- Ingredients are **mixed** to make a dough.
- Dough is **kneaded** to help the protein (gluten) soften and strengthen the dough.
The stages of baking

• The dough is left to rise (or 'prove') to double its original volume, as the yeast cells multiply and produce carbon dioxide gas.

• The dough is knocked back to remove the large air bubbles produced by the yeast. This ensures a more even texture and a better rise. Large bubbles would make large holes in the finished bread.
The stages of baking

• The dough is **shaped** and may be put in a tin.

• It is then covered and left to **rise**, or prove, again. When proved, the dough will be light, puffy and doubled in size.
The stages of baking

• The dough is ready to be baked. A hot oven (230°C, 450°F, gas mark 8) is needed to kill off the yeast cells.

• The baked bread should be well risen, golden and crisp and should sound hollow when you tap it on the base. (The change in colour is called dextrinization.)
For more information, go to: www.grainchain.com