

Engineering Tripos Part IIA  
Group G - Bioengineering

Extension Activity  
Fundamentals of Biotechnology – Bread making



The Bioengineering Extension Activity introduces a range of systems, questions and experimental techniques encountered in Bioengineering, from enzyme biochemistry to mechanical characterisation of biological systems. The overarching theme is bread making, which is one of the oldest forms of biotechnology. The students will nevertheless develop a fresh understanding of the underlying biochemical and biophysical aspects.

**Objectives:**

Students will become familiar with the following aspects:

- 1) Concentration measurements by light absorption, calibration and measurements. Application to enzyme kinetics with the example of starch degradation by amylase.
- 2) Observation and characterisation of unicellular organisms. Microscopy, vital staining and cell counting will be used to investigate gas production by yeast.
- 3) Handling and mechanical characterisation of soft systems. Various dough compositions and preparations will be compared using qualitative and quantitative characterisation techniques, including DMA for time dependant properties.

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