

School of Chemistry

Aims and Objectives: Session 2023-2024, Semester 2

Module CH2701: Physical Chemistry 2

Course Title: Introduction to Chemical Kinetics

Duration: 8 hours

Lecturer: Professor P. A. Wright

Aims: This course is designed to introduce students to some important areas of chemical kinetics. Topics covered will include elementary and chain reactions, steady states and determination of mechanisms. The approach to the subject area will be problem-based, and the application of kinetics to important chemical issues will be highlighted.

Objectives:

1. To derive and use integrated rate expressions for first and second order reactions.
2. To understand how rates and reaction order can be determined from experimental data.
3. To describe the temperature dependence of rate in terms of the Arrhenius equation and simple collision theory (SCT) and activated complex theory (ACT).
4. To discuss elementary, complex non-chain and chain reactions.
5. To introduce the use of the steady state treatment in the disentangling of rate data.
6. To consider the kinetics of chain reactions, e.g. ozone depletion, radical polymerisation.
7. To consider the kinetics catalysis, using of enzyme-catalyzed reactions as an example.
8. To give an introduction to state-of-the-art experimental studies of reactions on timescales of femtoseconds, and what they tell us about the reaction mechanism.