Energy estimates: proving stability of discretisations of partial differential equations

In this talk we will briefly give a conscious overview on the role of energy estimates in proving error estimates for discretisations of parabolic evolution equations.
In particular we will give some details on the main ideas and steps behind energy estimates used to prove stability of spatial semi-discretisations, and of backward difference full discretisations of parabolic partial differential equations.
The case of abstratc PDEs, evolving surface PDEs, mean curvature flow, and Cahn--Hilliard equation will be discussed.
We will give details on how the G-stability theory of Dahlquist and the multiplier techniques of Nevanlinna and Odeh are used to prove fully discrete stability.