Chapter 5 + Section 1.6 (end)

Enthalpy → energy plus the work to make room for the system under constant pressure from the environment

$$H \equiv U + PV$$ ← total energy to create the system and put it into an environment

But, the system can get its thermal energy from the surroundings, so all we really need to do is provide to the system any additional work

Gibbs Free Energy

$$G \equiv H - TS$$ ← energy to make the system and make room for the system minus the heat we get to extract from surroundings.

$$G \equiv U + PV - TS$$

Helmholtz Free Energy → total energy to create the system minus the heat we can extract from the surroundings

$$F = U - TS$$