CHEM 1611 CR PART II.

Let's look at "MACROSCOPIC" Chemistry

for the next 2 weeks → Part II of this course

We can think of (describe)

MATTER IN A BULK PHASE

MACROSCOPICALLY		MICROSCOPICALLY
T	temperature	x_1 y_1 z_1 p_{x_1} p_{y_1} p_{z_1}
V	volume	x_2 y_2 z_2 p_{x_2} p_{y_2} p_{z_2}
P	pressure	⋮
n	number of moles	for "moles" of particles in the system
E	internal energy	
H	enthalpy	
G	free energy	
S	entropy – randomness	

We will talk about these "variables" of the system

later on the course, Part III Quantum Chemistry Ref Ch 7-10

EQUILIBRIUM THERMODYNAMICS

NON-EQUILIBRIUM KINETICS

How fast is the rxn?
rxn rates?
activation energy?

let's look at this NOW

Defn thermo dynamics
Heat energy — movement motion transfer

energy balance
heat release, exothermic or endothermic?
temperature change, heat capacity, etc.

SOME BASIC Definitions "Jargons"

Our Universe CONSISTS of "System" — region of the universe that we are interested in

and "Surrounding" — every where else that we are not interested in

and we can define a "State" of the system by some macroscopic variables — (often called thermodynamic variables) OR PROPERTIES

e.g.	T	temperature	We will first introduce these by examining gases Ref Ch 5
	V	volume	
	P	pressure	
	n	number of moles or amount	
	E	internal energy	Then we will introduce these two other variables in thermo chemistry
	H	enthalpy	
	ΔE	Process or rxn	
	ΔH		
$C_P, C_V \sim$	ΔT		

Thermo chemistry deals with the "Energy" balance of a rxn as defined by the Stoichiometry of the system. Ref Ch 6

There are THREE Laws in thermodynamics (Chem 254) Here, we will talk about the FIRST LAW, which has to do with ENERGY CONSERVATION, and will leave the 2nd LAW ~ ENTROPY or randomness and the 3rd LAW ~ TEMPERATURE ZERO to Chem 254