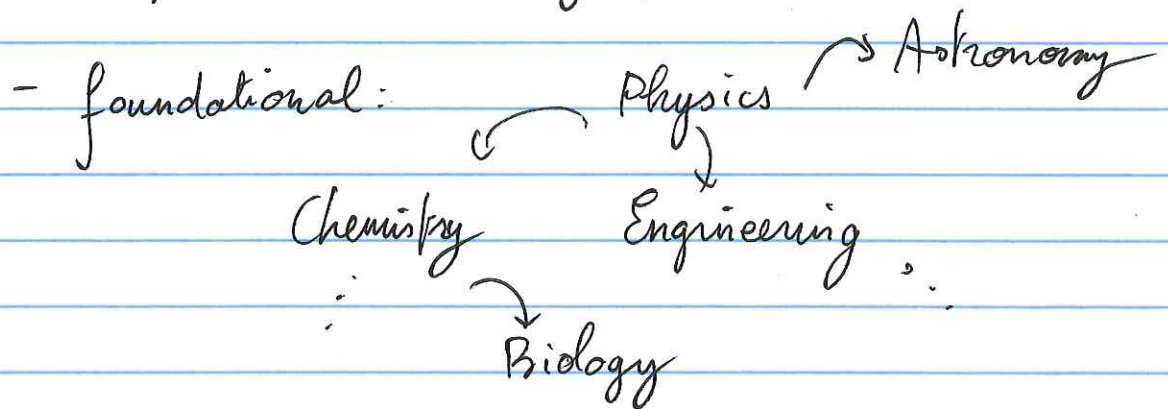


Physica = mathematical descriptions of the inanimate world

- empirical: tested by experiment



- universal: 10^{-15} m \rightarrow 10^{22} m
(size proton) (size Universe)

femtoseconds (10^{-15} s) \rightarrow age of Universe
 $15 \times 10^9 \text{ yrs}$

- limitations: no ethics, no aesthetics

Units : all physics measurements have units

SI/MKS system : Time : seconds, s

BASIC

Length : meters, m

Mass : kilogram, kg

Temperature : Kelvin, K

Electrical current : Ampère, A } PHYS108

Luminous intensity : candela, cd

Derived units : 1 inch \approx 2.54 cm = 0.0254 m

$$\text{Power : Watt} = \frac{\text{kg m}^2}{\text{s}^3}$$

$$\begin{aligned} \text{Acceleration : } \frac{\text{Velocity}}{\text{Time}} &= \frac{\text{Length/Time}}{\text{Time}} \\ &= \frac{\text{Length}}{(\text{Time})^2} = \frac{\text{m}}{\text{s}^2} \end{aligned}$$

Force = Mass \times Acceleration :

$$\text{kg} \cdot \frac{\text{m}}{\text{s}^2} = \text{Newton, N}$$