

CH 12

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

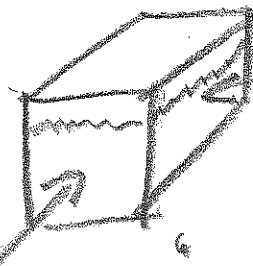
example 1: 2 kg of water

has volume 0.002 m^3

$$\text{density} = \frac{2 \text{ kg}}{0.002 \text{ m}^3} = \frac{1000 \text{ kg}}{\text{m}^3}$$

$$\text{weight density} = \frac{\text{weight}}{\text{volume}}$$

$$\text{EX 2: } \frac{(2 \text{ kg})(9.8 \frac{\text{m}}{\text{s}^2})}{0.002 \text{ m}^3} = 9800 \frac{\text{N}}{\text{m}^3}$$



volume = 0.002 m^3

WATER IN CONTAINER

HOOKE'S LAW

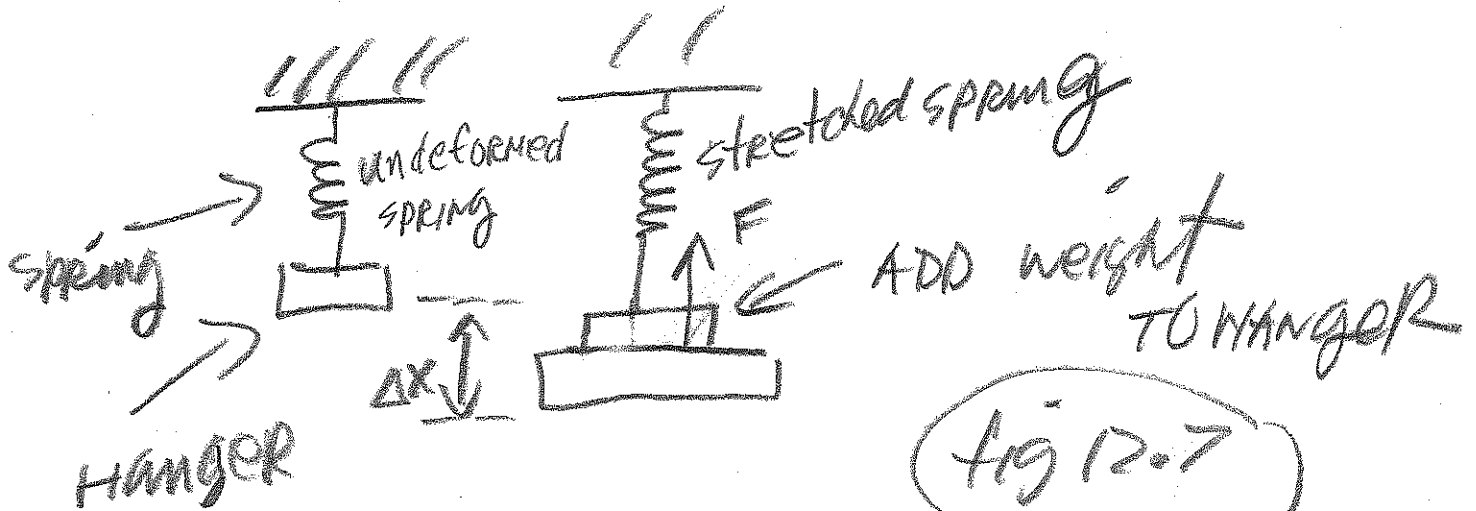


fig 12.7

$$F \propto \Delta x$$

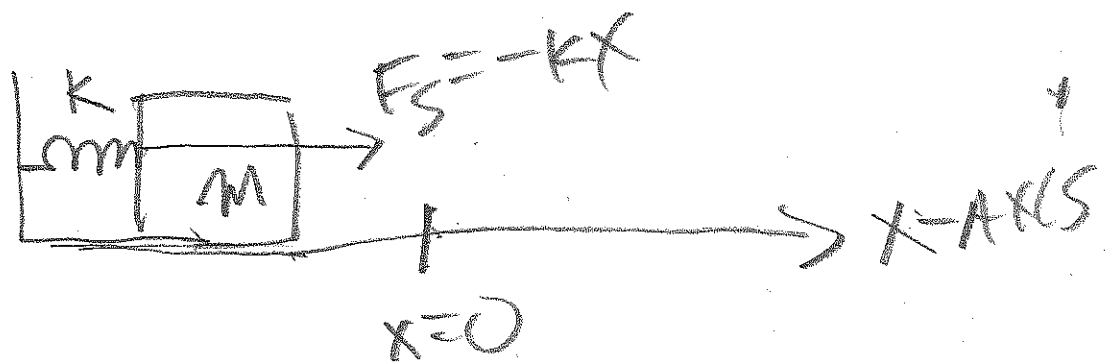
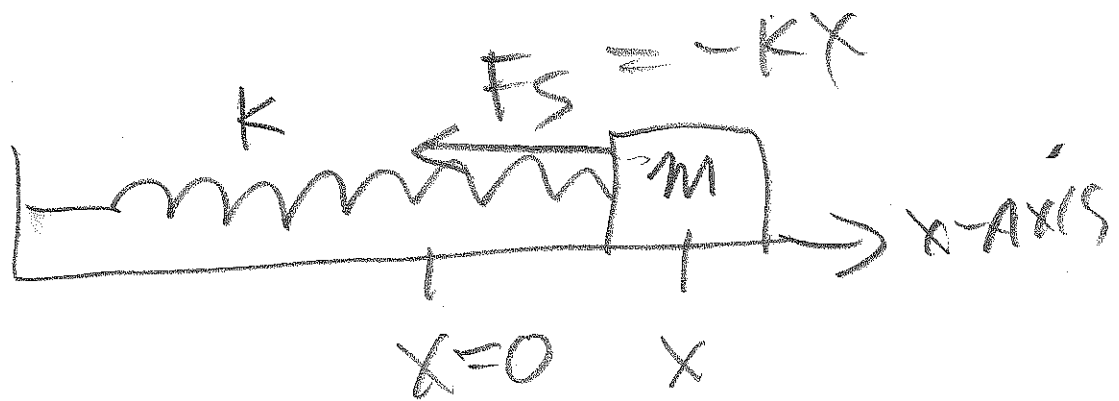
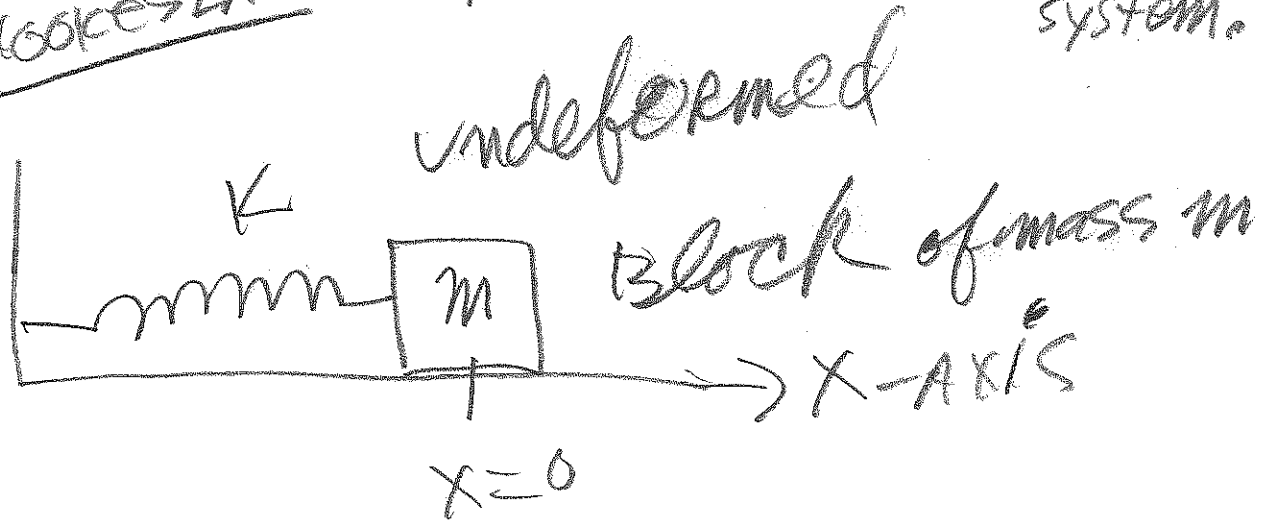
$$F = k \Delta x$$

$$F = \text{spring force}$$

$$k = \text{spring force constant}$$

ASSUME
HANGER
and
spring
HAVE
NEGLECTABLE
mass.

HOOKE'S LAW for HORIZONTAL SPRING-MASS system.



$\vec{F}_s$ ALWAYS points TOWARDS
ORIGIN (where spring is
undeformed)