

PHYSICAL WORK ENVIRONMENT

**DR. ANKUR GUPTA
IIT BHUBANESWAR**

LECTURE OUTLINE

1. The Visual Environment and Lighting
2. The Auditory Environment and Noise
3. Climate Control in the Work Environment

LECTURE OUTLINE

- Visual environment
 - Physics of light
 - Visibility
 - Lighting system



**VISUAL
ENVIRONMENT**

VISUAL ENVIRONMENT AND LIGHTING

- About 80% of the information input to the human brain comes from visual stimuli
- Topics:
 - The physics of light
 - Visibility
 - Lighting systems

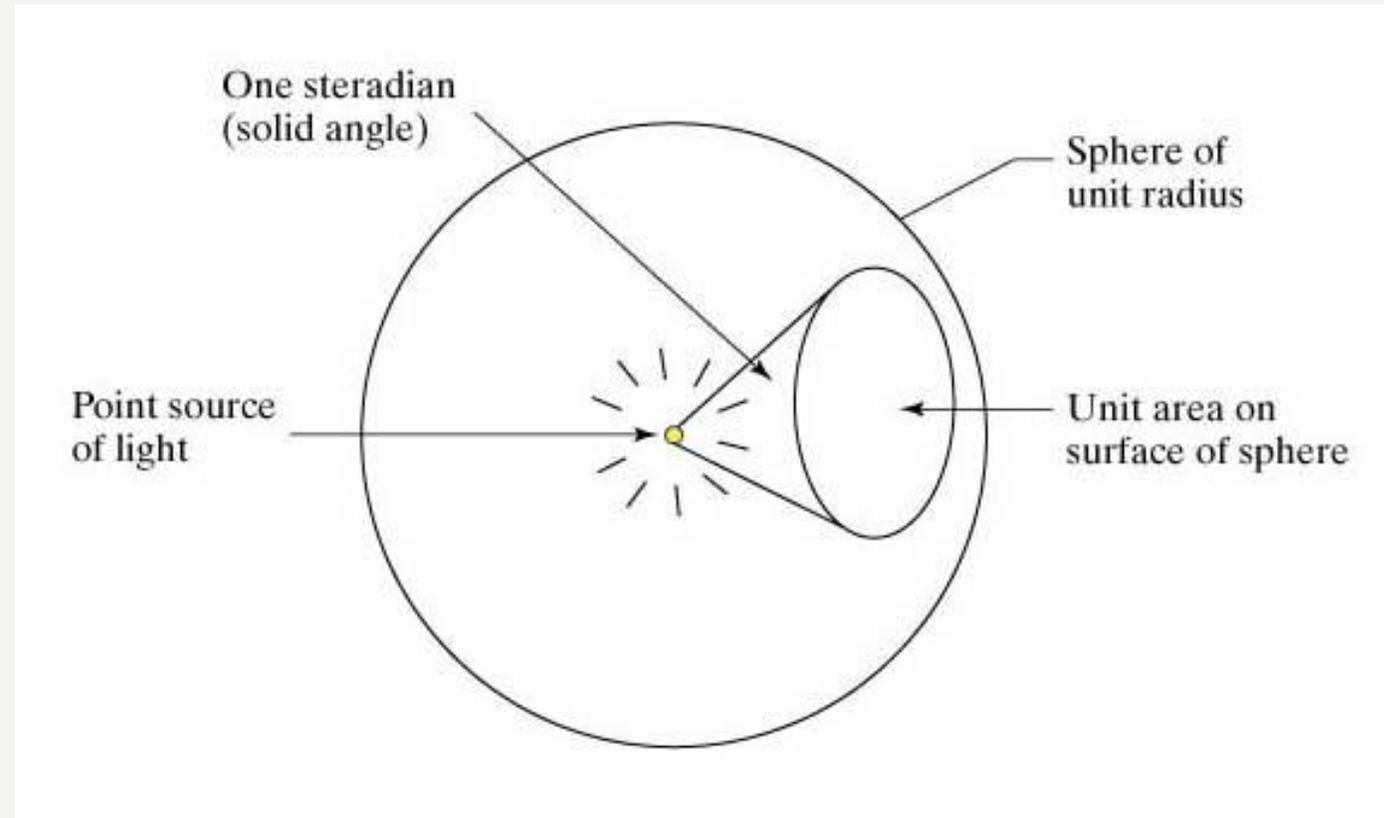


PHYSICS OF LIGHT

THE PHYSICS OF LIGHT

- Luminous flux - rate at which light energy is emitted in all directions from a light source
 - It is the power of the light source
 - Units: lumen (lm)
- Luminous intensity - luminous flux emitted in a given direction
 - Units: candela (cd)

POINT SOURCE OF LIGHT



THE PHYSICS OF LIGHT

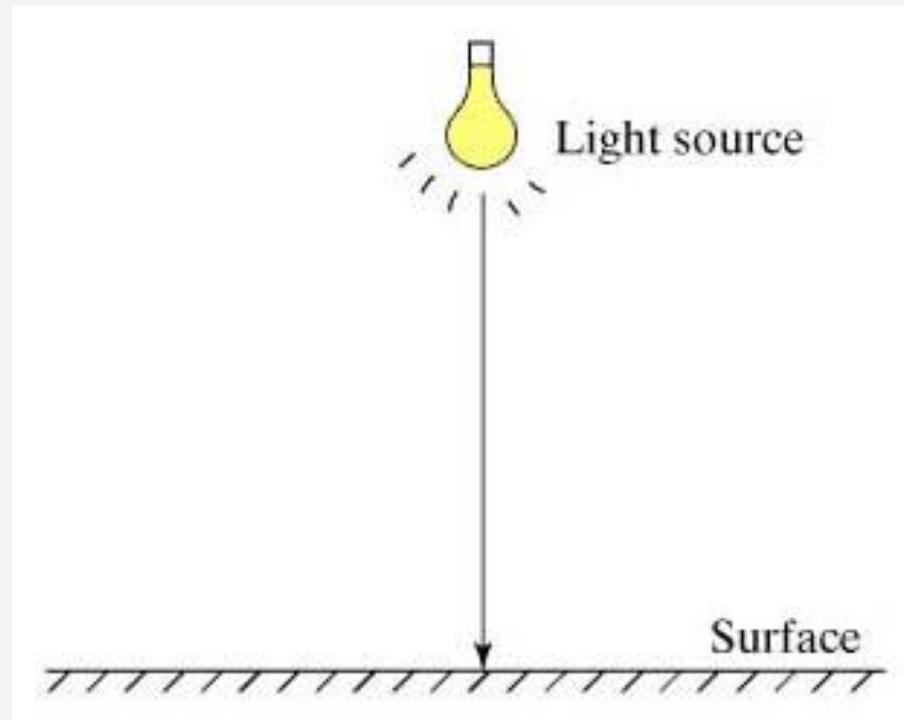
- Illuminance - luminous flux shining per unit area on a surface
 - Units: lux (lx) = 1 lumen per sq meter
- Luminance - amount of light reflected from a surface
 - Units: cd/sq m
 - Depends on
 - Illuminance - amount of light striking surface
 - Reflectance - depends on color and texture of surface

ANGLE OF INCIDENCE $\theta = 0$

Illuminance decreases with distance from light source

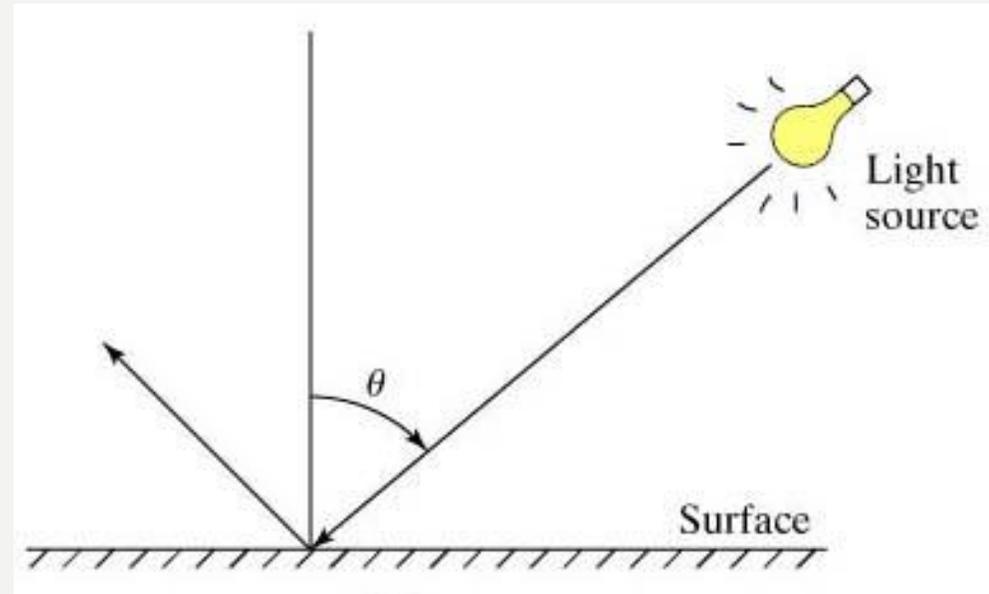
$$E = I / d^2$$

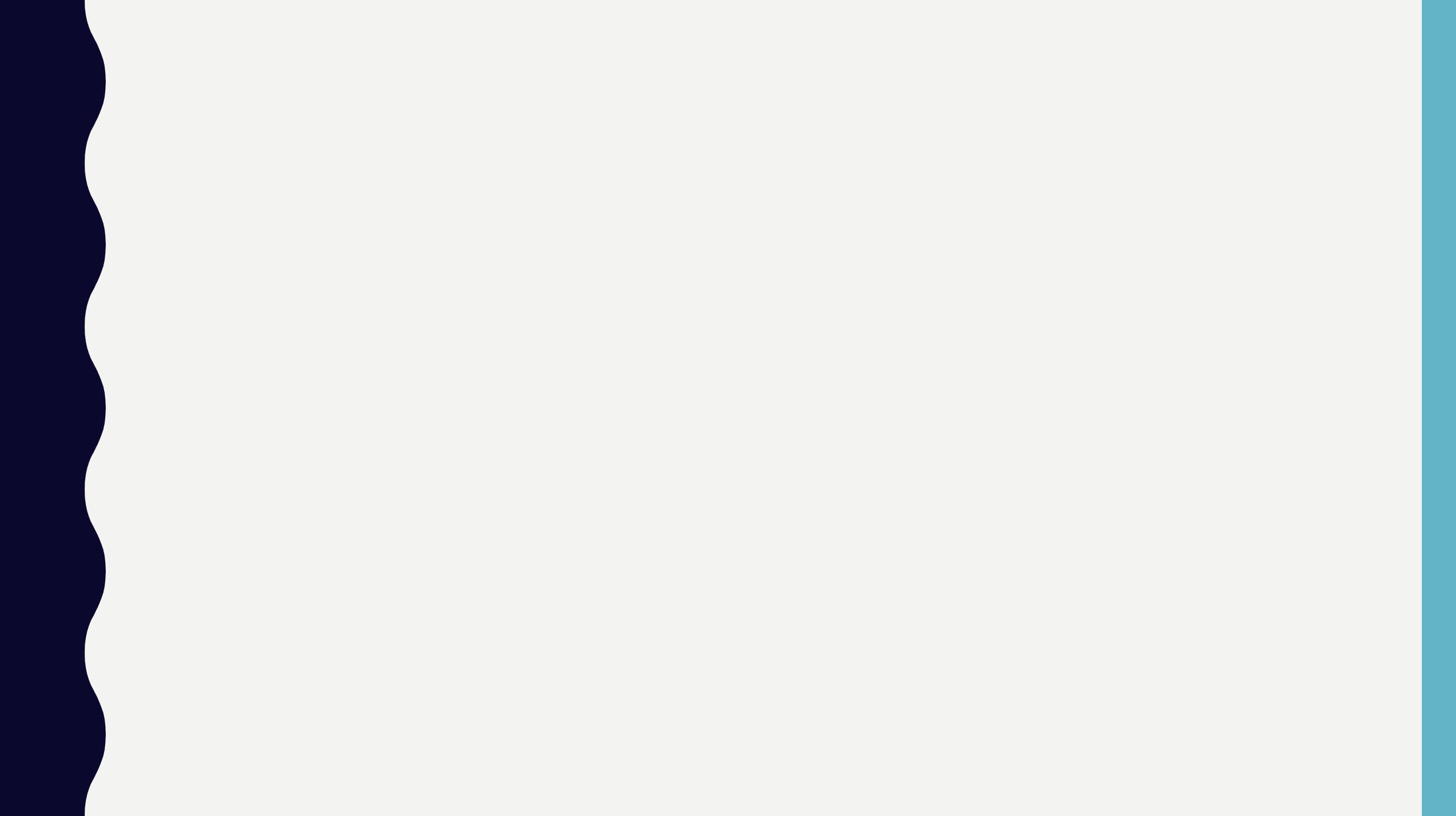
where E = illuminance, I = luminous intensity, and d = distance



INCIDENT LIGHT IS AT ANGLE θ

$$E = I \cos \theta / d^2$$







**LECTURE
CLOSING**

DID YOU KNOW.....?????

- A 23-year-old Google employee lives in a truck in the company's parking lot.

When 23 year old Brandon started working as software engineer in Google, he opted out of settling into an overpriced San Francisco apartment. Instead, he moved into a 128-square-foot truck.



IF YOU WERE.....????

- If you were a project manager at Maruti Suzuki, how would you take care of the environment to make it look more productive and effective.....???



GRAFFITI

Copyright 2005 by Randy Glasbergen.
www.glasbergen.com



“There is no *I* in *TEAM*. But there is an *M* and an *E* and that spells *ME!*”

A decorative wavy line in light blue and white on the left side of the slide.

THANK YOU ...



**PLEASE READ VISUAL ENVIRONMENT FROM
RECOMMENDED REFERENCE BOOKS FOR A
BETTER UNDERSTANDING OF NEXT
LECTURE**