

Energy Balance

Energy is transferred in two forms

1. Heat
2. Work

Heat :

When heat is produced it generates energy.

- In heat, energy is transferred due to temperature difference.

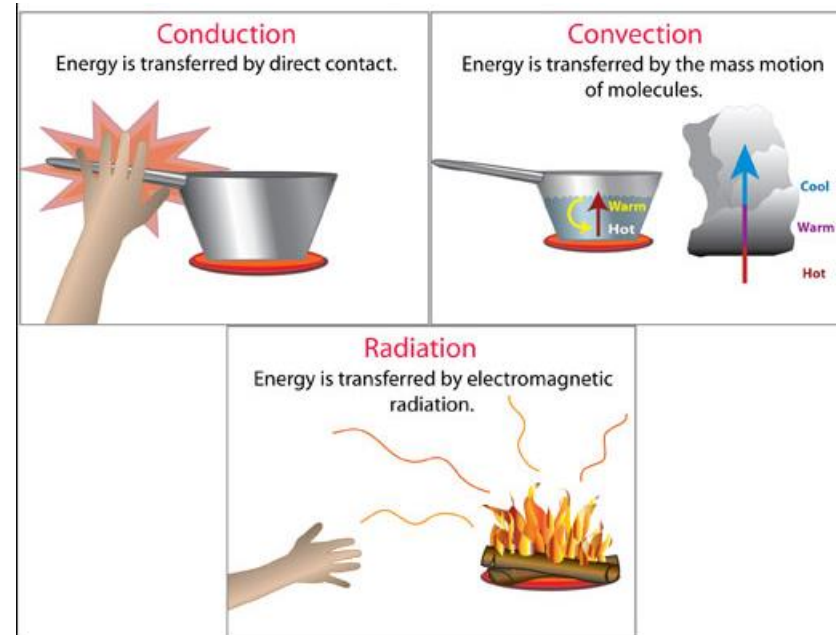
• FUNDAMENTALS OF HEAT TRANSFER

1. Conduction
2. Convection
3. Radiation

1. Conduction is the transfer of thermal energy through direct contact.

2. Convection is the transfer of thermal energy through the movement of a liquid or gas.

3. Radiation is the transfer of thermal energy through thermal emission.



Conduction
(via direct contact)

- Conduction is the direct flow of heat through a material resulting from physical contact.

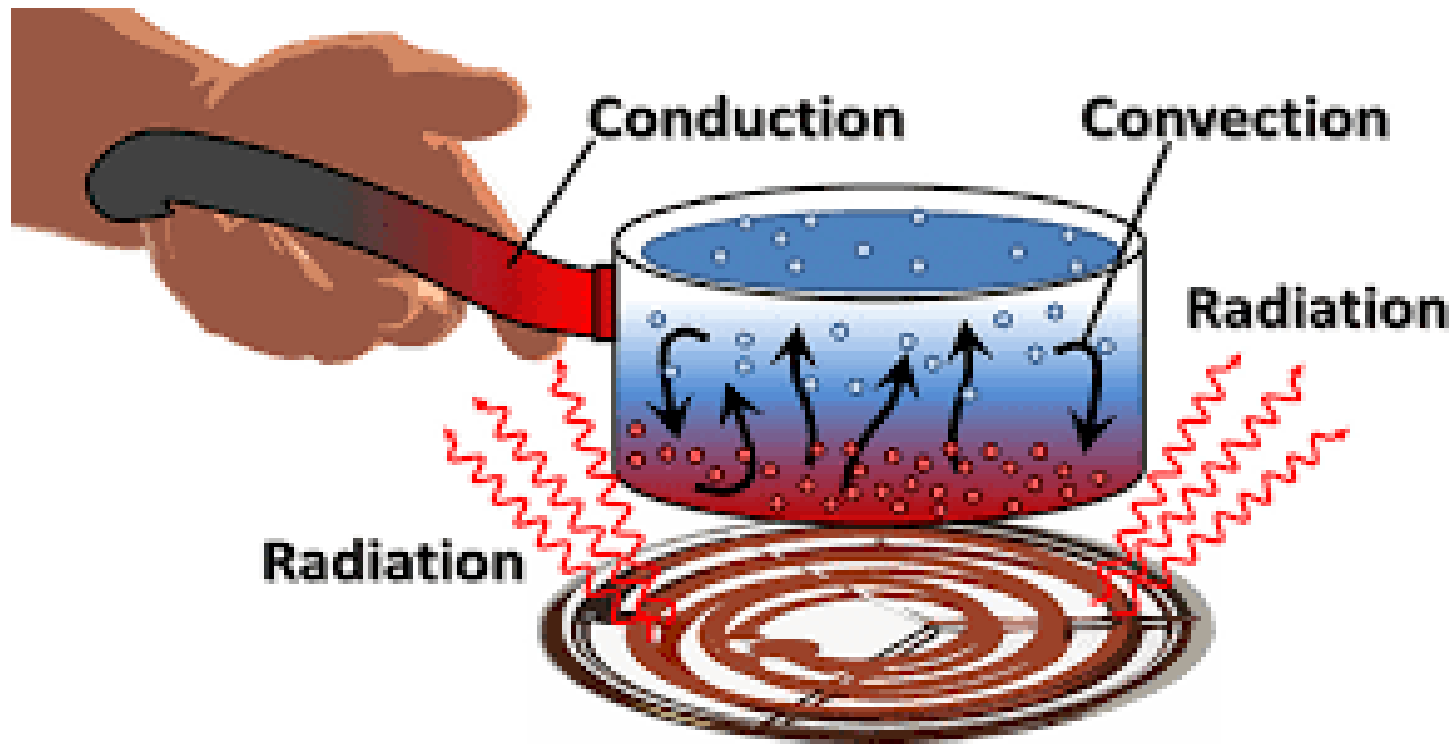
Convection
(via fluid)

- heat transfer between a surface and adjacent fluid (gas, air or liquid) and by the flow of fluid from one place to another, induced by temperature

Radiation
(via electromagnetic Radiation)

- No transfer medium required
- It's the transfer of thermal energy through matter of space by electromagnetic waves.

Conduction



Conduction Examples

1.

A piece of cheese melts as heat is transferred from the meat to the cheese (**Contact**), YUM!



2. Using ice water to blanch vegetables after steaming to keep them from losing their color

Examples of Convection



▶ **Radiation**

Toaster and grilling food are good examples.

When heat is radiated it travels in straight lines and any object in its path becomes heated.

e.g. grilling, toasters and microwaving

