A system is a set of interacting components which together function as a single whole.

Components: in dividend pieces of a system.

Inter-relationships of:

1. Components
2. Connections: cause-effect, flow, linkages between
3. States of components
4. State in the system, and which can further affect the system state.

Feedbacks: one or more self-perpetuating mechanisms at some point in time.

Systems can be characterized by:

1. Components
2. Connections
3. States of components

Kumpel et al. (2004) CYZ
Geol 437: System couplings: "My three laws of auto repair" 2/24/18

1. If fuel is not reaching the engine, the car will not start!

2. If the coolant level decreases the engine temperature is going to increase.

3. If the radio isn't plugged in - it won't play.
Geo 1487: Systems theory - climate examples

- Atmospheric water vapor, temperature
- States:
- Couplings:
- Coupled system:
- System diagnoses

Diagram:

- Positive feedback loop:
- Negative feedback loop:

\[ (+) \cdot (+) \cdot (+) = (+) \]

\[ (-) \cdot (+) \cdot (+) = (-) \]