Flow of Energy in Ecosystems

The chemical elements that make up the molecules of living things pass through food webs and are combined and recombined in different ways. At each link in a food web, some energy is stored in newly made structures but much is dissipated into the environment as heat. Continual input of energy from sunlight keeps the process going.
Energy
Flow of Matter

Different energy levels are associated with different configurations of atoms in molecules. Some changes of configuration require a net input of energy, others cause a net release.
Chemical Reactions
Energy producing & consuming reactions

Food provides molecules that serve as fuel and building material for all organisms.
Energy producing & consuming reactions
Flow of Matter

Atoms may stick together in well defined molecules, or may be packed together in large arrays. Different arrangements of atoms into groups compose all substances.
Particle theory
Flow of Matter
Atoms & Molecules
Conservation of Matter
Chemical Reactions
States of Matter

Almost all food energy comes originally from sunlight.
Energy

An important bit of reaction between substances involves the combination of oxygen with something else—as is burning or rusting.

Organisms get energy from oxidising their food, releasing some of its energy as heat.

Organisms that eat plants break down the plant structures to produce the materials and energy they need to survive. Then they are consumed by other organisms.
Energy producing & consuming reactions
Living things don't exist in isolation
Flow of Matter

Plants use the energy from lights to make sugars from carbon dioxide and water.
Energy
Flow of Matter

All organisms including the human species, are part of and depend on two main interconnected global food webs. One includes microscopic ocean plants, the animals that feed on them and finally the animals that feed on those animals. The other web includes land plants, the animals that feed on them and so forth.
Relationships are complex
The environment
Flow of Matter

Energy can change from one form to another in living things.
Energy

Most of what goes on in the universe involves some form of energy being transformed into another. Energy in the form of heat is almost always one of the products of energy transformations.
Energy
Energy Transformations

One of the most general distinctions among organisms is between plants, which use sunlight to make their own food and animals, which consume energy rich foods.
Relationships are complex
Living things don't exist in isolation
Energy
Flow of Matter

Plants can use the food they make immediately or store it for later use.
Flow of Matter

Almost all kinds of animals' food can be traced back to plants.
Flow of Matter

From food, people obtain energy and materials for body repair and growth.
Flow of Matter

Some source of "energy" is needed for all organisms to stay alive and grow.

Most living things need water, food and air.
Living things
Flow of Matter
Cell Functions

Plants and animals both need to take in water and animals need to take in food. In addition, plants need to take in light.
Flow of Matter

Animals eat plants or other animals for food.
Flow of Matter

energy in living things ***plants making food*** ***food web***

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