4:4a Ornithology

- While it is impossible to do justice to studies such as entomology and ornithology in such a short period of time, we can at least get an introduction.
- Ornithology is the study of birds.
- Birds, of course, are vertebrates that belong to class Aves.
- Like most insects and the bats, birds are capable of true flight.

- ❖Feathers and light weight, hollow bones facilitate flight.
- ❖Powerful breast muscles and a large heart also help. Air sacs inside the body cause body weight to be greatly reduced.

4:4b Ornithology

- ❖Large breast muscles alone, however, do not guarantee a bird will be capable of flight over long distances.
  - This muscle also requires a rich blood supply (vascularization).
  - The dark breast meat of ducks is indicative of extensive vascularization that allows prolonged and powerful flight.
  - The white breast meat of the turkey is indicative of minimal vascularization which accounts for their inability to fly long distances.
- ❖Some birds, of course, have lost their ability to fly.

The ostrich ~ a large flightless birds

- Birds, like mammals:
  - ❖have 4-chambered hearts.
  - ❖are warm blooded.

4:4c Ornithology

- Reproduction is by eggs.
  - ❖Birds, unlike more primitive animals that lay eggs (such as fish), lay few eggs.
  - ❖Parents, usually the female, expend tremendous amounts of energy incubating and caring for their young.
  - ❖Eggs are deposited in nests that vary from elaborate structures to simple depressions in the ground.
    - ❖A nest full of eggs is called a "clutch."
    - ❖Bird eggs have hard, protective shells.
- Courtship behavior can be elaborate and very costly in terms of energy expended.

Nests of bowerbirds are elaborate structures.

4:4d Ornithology

- After a period of incubation, young birds hatch. They are either:
  - ❖Altricial
    - meaning the young bird is naked, helpless and dependent upon its parents for all its needs.
      - Most birds are altricial.

Kestrels like all birds of prey are altricial.

  - ❖Precocial
    - meaning the young bird is able to move around and, at least to some degree, fend for itself.
      - Examples of precocial species would include chickens, quail, ducks and geese.

Chickens are precocial

4:4e Ornithology

- Flight, endothermy (warm-blooded) and a number of other characteristics make birds the most successful vertebrates.
  - ❖This claim is supported by the great numbers of birds on the planet.
  - ❖Birds have successfully colonized every conceivable habitat on the planet including the harsh environment of Antarctica.

Penguins have colonized Antaractica.

  - ❖Their ability to fly long distances in a relatively short time enables them to migrate seasonally, thus assuring they will have the resources they need to survive.
  - ❖Different birds have different habitat and dietary requirements. This allows them to coexist with minimal competition.

4:4f Ornithology

- Birds evolved approximately 150 million years ago from dinosaur ancestors.
  - ❖Archaeopteryx, the earliest known true bird, lived in the Jurassic Period of the Mesozoic Era.
  - ❖Birds descended from dinosaurs called Theropods.

Archaeopteryx

  - ❖Feathers are modified scales which were inherited from these theropod predecessors.
  - ❖Birds retain some reptilian traits such as scales on their legs and their ability to reproduce by eggs.