

## General Biology II (w/Lab) Syllabus

**BIO K122 (T1), Four sem. hrs. credits**

**CRN: 10694**

**BIO K122 (T1A)**

**Spring 2015**

**CRN: 10695**

**Three Rivers Community College**

**574 New London Turnpike**

**Norwich, CT 06360**

**Instructor:**

Professor William J. Dopirak, Jr.

**Office phone:** 860-215-9424

**e-mail:** wdopirak@trcc.commnet.edu

**Office location:** C-130

**Office Hrs.**

**T/R 2:00-3:00pm; F 4:30-5:30pm**

**(Or by appointment)**

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### **Required Texts:**

Borror, D.J. 1960. Dictionary of Word Roots and Combining Forms. Mayfield Publishing; Mountain View, California. p.134 ISBN # 0-87484-053-8

**Prerequisite:** BIO K121 with a "C" grade or better or permission of the instructor.

**Corequisite:** None required; CHE K122 is recommended.

### **Catalog Description:**

This course is a continuation of General Biology I. Topics to be covered include taxonomy, the diversity of life forms from the microbes to the animals, the structures and functions of both plant and animal systems, as well as ecology, ecosystems and evolution. (For transfer credit, student should take both BIO\* K121 and K122.) Three-hour lecture; one three-hour laboratory period.

### **Attendance Policy:**

Students are expected to attend class and laboratory sessions regularly. If a class or lab is missed due to circumstances beyond your control, **please**, be sure to notify your instructor and make the necessary arrangements for obtaining the lecture notes. **You will be responsible** for the material.

### **Grade Evaluation:**

There will be three unit examinations, four laboratory practicum's. There will be twelve quizzes. The lowest two quiz grade will be dropped. Exam and quiz questions will consist of multiple choice and/or short answers. Lab journals: For each Phylum we cover in lab, you must pick three species (of your choosing) to systematically place in the respective taxa, and a brief summary of that species (natural history ect.).

### **Add/Drop Procedures:**

Please consult the school catalog for this policy.

### **Suggestions for the course:**

To gain a better understanding be sure to read the notes and review the phyla **before** coming to class. Also, be prepared to participate in classroom discussions.

**Grading:**

Final grade will based on the following:

Semester Grade*	-----60%
Laboratory Grade <sup>£</sup>	-----40%
	100%

\*Semester grade = 40% (Unit tests) + 20% (quizzes)

£Laboratory grade = 30% (Lab practicum's) + 10% (Lab manuals)

**Final Grade:**

100.0-99.0= A	90.4-87.5= B+	79.4-77.5= C+	69.4-63.5= D+
98.9-93.5= A	87.4-84.5= B	77.4-72.5= C	63.4-59.5= D
93.4-90.5= A-	84.4-79.5= B-	72.4-69.5= C-	59.4-00.0= F

**College Withdrawal Policy:**

A student who finds it necessary to discontinue a course once class has met must provide written notice to the registrar. **See Registrar for dates.** After that period, a student wishing to withdraw must obtain written authorization of the instructor to receive a "W" grade on their academic record, non-punitive grade indicating termination of class participation. Students who do not withdraw, but stop attending **will receive** a grade of "F" for the final grade. **Verbal withdrawals cannot be accepted.**

**Academic and Classroom Misconduct:**

The instructor has the primary responsibility for control over classroom behavior and maintenance of academic integrity, and can order the temporary removal or exclusion from the classroom, and/or laboratory, of any student engaged in conduct violative of the general rules and regulation of the institution. Plagiarism, cheating, or any form of academic dishonesty is **prohibited**. Students guilty of academic dishonesty directly or indirectly will receive a **zero** for an exercise or exam and may receive an **F** for the course in addition to other possible disciplinary sanctions that maybe imposed through the regular institutional procedures. Any student that believes he or she has been erroneously accused may appeal the case through the appropriate institutional procedures if their grade was affected.

**Disabilities Statement:**

If you have a hidden or visible disability, which may require classroom or test-taking modifications, please see me as soon as possible. If you have not already done so, please be sure to register with disability counselors by contacting Student Services Office.

<b>TRCC Disabilities Service Providers</b> Counseling & Advising Office Room A-119	
<b>Matt Liscum</b> (860) 383-5240	<ul style="list-style-type: none"> <li>• Physical Disabilities</li> <li>• Sensory Disabilities</li> <li>• Medical Disabilities</li> <li>• Mental Health Disabilities</li> </ul>
<b>Chris Scarborough</b> (860) 892-5751	<ul style="list-style-type: none"> <li>• Learning Disabilities</li> <li>• ADD/ADHD</li> <li>• Autism Spectrum</li> </ul>

**BIO K122 General Biology II****Tentative Schedule****Spring 2015****Lecture: 3:30pm-4:50pm T&R Room 221****Laboratory: 3:00pm-6:00pm W Room 215**

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<b>Date</b>	<b>Topic</b>
01/22	Introduction, BIO I review
01/27	Principles of evolution
01/28	<b>LAB</b> -Systematic classification "Kingdom fastenales" and " <i>Caminalcules</i> "
01/29	<b>Quiz 1</b> - Geological timescale
02/03	Prokaryotes, Archaeobacteria
02/04	<b>LAB</b> - Gram staining
<b>02/05</b>	<b>NO CLASSES (Faculty Professional Day)</b>
02/10	Eubacteria - Protista
02/11	<b>LAB</b> - Protists/Algae
02/12	<b>Quiz 2</b> - Diatoms – Chromists (algae)
02/17	Protozoans (cont.)
<b>02/18</b>	<b>Lab Practicum I</b>
02/19	<b>Quiz 3</b> - Kingdom Plantae
02/24	Kingdom Plantae (cont.)
02/25	<b>LAB</b> Kingdom Plantae
<b>02/26</b>	<b>UNIT EXAM I</b>
03/03	Kingdom Fungi
03/04	<b>LAB</b> - Kingdom Fungi
03/05	<b>Quiz 4</b> - Minor invertebrates
03/10	Poriferans
03/11	<b>LAB</b> - Sponges - Crustaceans
03/12	<b>Quiz 5</b> - Annelids
<b>03/17</b>	<b>SPRING BREAK</b>
<b>03/18 &amp; 19</b>	<b>NO CLASSES</b>
03/24	<b>Quiz 6</b> – Platyhelminthes
03/25	<b>Lab Practicum II</b>
03/26	<b>Quiz 7</b> –Minor invertebrates
03/31	Annelids
04/01	<b>LAB</b> - grasshopper/crayfish dissection
04/02	<b>Quiz 8</b> – Arthropods
04/07	Arthropods (cont.)
04/08	<b>LAB</b> squid and sea star dissection
<b>04/10</b>	<b>LAB PRACTICAL III</b>
04/14	Arthropods (cont.)
04/15	<b>LAB</b> - Mystic Aquarium ( <i>field excursion</i> )
04/16	<b>Quiz 9</b> - Echinoderms
04/21	Amphibians
04/22	<b>LAB</b> - Perch & shark dissection
04/23	<b>Quiz 10</b> - Fish & Reptiles
04/25	Reptiles & Birds
04/29	<b>LAB</b> - Owl pellet investigation
04/30	<b>Quiz 11</b> Birds (cont.)
05/05	Mammals
05/06	<b>LAB</b> - Mink dissection
05/07	Mammals (cont.)
<b>05/12</b>	<b>LAB PRACTICAL IV</b>
05/13	<b>Quiz 12</b> - Review for Exam III
<b>05/14</b>	<b>UNIT EXAM III (Final)</b>

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**Syllabus Revisions:** This schedule may be subject to change as the instructor sees fit. Any changes will be announced by the instructor in advance. Be prepared to extend the semester another week, for snow days.

## **Course Objectives: BIO K122 - General Biology II**

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1. The student will be able to name the Kingdoms of the life forms and the main traits of each Kingdom.
2. The student will be able to name the major taxonomical units these Kingdoms.
3. The student will be able to explain the criteria used to distinguish the phyla of these Kingdoms.
4. The student will be able to explain the criteria that are used for grouping plants.
5. The student will be able to explain the characteristics used to place single-celled organisms into a classification system.
6. The student will be able to give examples and state unique characteristics of various Prokaryotae, Protista and Fungi.
7. The student will be able to give the characteristics of the main groups of plants.
8. The student will be able to demonstrate the life cycle of mosses and ferns.
9. The student will be able to demonstrate the basic life cycles in plants.
10. The student will be able to distinguish between perfect and imperfect flowers.
11. The student will be able to list the parts of a flower and state the function of each part.
12. The student will be able to list in sequence the major events in the reproductive portion of the life cycle of a flowering plant.
13. The student will be able to explain germination in both monocots and dicots.
14. The student will be able to identify and use the following criteria in the classification of the Kingdom Animalia:
  - a. Shape (symmetry)
  - b. Skeletons
  - c. Body layers (germ layers)
  - d. Body cavities
  - e. Systems
  - f. Embryonic development
  - g. Segmentation
15. The student will be able to classify the animals by phyla.
16. The student will be able to identify the characteristics of each animal group with emphasis on distinguishing characteristics for each particular phyla.
17. The student will be able to review in detail the anatomy of one or more animals within each taxonomic group.
18. The student will be able to summarize the various systems characteristic of each phyla. These will include the digestive, circulatory, excretory, respiratory and reproductive systems.
19. The student will be able to understand the role of the skeletal and muscular systems in support and movement.
20. The student will be able to demonstrate knowledge of the heart and vessel structure and function.
21. The student will be able to demonstrate knowledge of the structure and function of the lymphatic system.
22. The student will be able to demonstrate knowledge of the composition and circulation of human lymphatic fluid.
23. The student will be able to demonstrate knowledge of the composition and function of blood.
24. The student will be able to explain the phases of the respiratory process.
25. The student will be able to demonstrate knowledge of the structure and function of the respiratory passageways.
26. The student will be able to name, describe the location and give the general functions of each of the digestive organs.

27. The student will be able to list the various digestive enzymes secreted by the digestive glands and describe the function of each.
28. The student will be able to define nutrition, nutrients and essential nutrients.
29. The student will be able to list and give the general function of the major vitamins.
30. The student will be able to define excretion and identify all of the systems involved in the process.
31. The student will be able to demonstrate knowledge of the structure, location and function of the excretory organs such as the kidneys, ureters, bladder and urethra.
32. The student will be able to demonstrate knowledge of the physiology of excrement formation.
33. The student will be able to demonstrate knowledge of cell types found in nervous systems.
34. The student will be able to demonstrate knowledge of the electrochemical changes associated with impulse transmission and synaptic transmission.
35. The student will be able to demonstrate knowledge of the structure, organization and function of the brain.
36. The student will be able to demonstrate knowledge of the structure, organization and function of the spinal cord.
37. The student will be able to demonstrate knowledge of the structure, organization and function of the autonomic nervous system.
38. The student will be able to demonstrate knowledge of the structure and function of the specialized sensory receptors and organs.
39. The student will be able to demonstrate knowledge of the structure and function the sensory receptors and organs.
40. The student will be able to identify, give the location and secretion of the various endocrine glands.
41. The student will be able to demonstrate knowledge of the identity, source and function of the hormones.
42. The student will be able to demonstrate knowledge of the regulation of hormone secretion.
43. The student will be able to demonstrate knowledge of the structure, location and function of the reproductive anatomy.
44. The student will be able to demonstrate knowledge of the physiological changes relative to the reproductive cycles.
45. The student will be able to demonstrate knowledge of the process of gametogenesis.
46. The student will be able to demonstrate knowledge of fertilization and embryonic development.
47. The student will be able to define predation.
48. The student will be able to explain the relationship and interaction between the predator and prey.
49. The student will be able to define symbiosis and describe the different symbiotic relationships.
50. The student will be able to recognize the various tropic levels of energy and the characteristics of the various organisms in each level.
51. The student will be able to identify a food chain, food web, and the pyramid of energy.
52. The student will be able to recognize the living and non-living factors and their interaction within an Ecosystem.
53. The student will be able to define pollution and identify the types of pollution and their effects on the ecosystem.
54. The student will be able to define Biosphere.

55. The student will be able to define biomes, list and give the characteristics of the different types of biomes.
56. The student will be able to gain knowledge of the modern concept of Evolution

### **TOPICAL OUTLINE - Biology K122 General Biology II**

1. Evolution: Introduction and Historical Background
2. Evidence
  - A. Fossil Record
  - B. Biogeography
  - C. Comparative Anatomy
  - D. Embryological Development
  - E. Molecular Data
3. The modern concepts of evolution
  - A. Microevolution
    1. Population Genetics
    2. Mutation
    3. Genetic Drift
    4. Gene Flow
    5. Selective Pressures
      - a. Natural Selection
      - b. Sexual Selection
  - B. Macroevolution
    1. Speciation: Gradualism and Punctuated Equilibrium
      - a. Sympatric
      - b. Allopatric
      - c. Parapatric
    2. Reproductive Isolation
      - a. Pre-zygotic
      - b. Post-zygotic
    3. Geographic Isolation
      - a. Abrupt
      - b. Clines
  - C. Chemical Evolution
4. Primate Evolution
5. Evolution vs. Creation

### **Domain (Superkingdom) Prokaryota**

#### **Two kingdoms:**

#### **Kingdom Archaeobacteria**

##### **Division Mendosicutes**

**Class Euryarchaeota** – (methanogens)

**Group Halobacteriales** – (salt-loving)

**Group Archaeoglobales** – (sulfate-reducing)

**Class Crenarchaeota** – (thermoacidophils)

#### **Kingdom Eubacteria**

**Division Firmicutes** – (Gram positive bacteria)

**Division Gracilicutes** – (Gram negative bacteria)

**Division Tenericutes** – (lack cell walls)

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**Domain (Superkingdom) Eukaryota**

**Four Kingdoms**

**Kingdom Protista**

Fungus like protistans:

**Phylum Oomycota** - Watermolds (downy mildews)

**Phyla Acrasiomycota and Myxomycota** - Slime Molds

Amoeboid protozoans

**Phylum Sarcodina** – Foraminiferans & Heliozoans

Ciliated protozoans

**Phylum Ciliophora** - *Paramecium* spp.

Flagellated protozoans

**Phylum Mastigophora**

Euglenoids

**Phylum Euglenophyta** - *Euglena* spp.

Dinoflagellates

**Phylum Pyrrophyta**

Diatoms

**Phylum Bacillariophyta** – diatoms

Radiolarians

**Phylum Actinopoda**

Zoomastigota

**Phylum Zoomastigina**

Algae – (Chromists)

**Phylum Chrysophyta** – Golden algae

**Phylum Haptophyta** - Coccoliths

**Phylum Rhodophyta** - Red algae

**Phylum Xanthophyta** – Yellow algae

**Phylum Phaeophyta** - Brown algae

**Phylum Chlorophyta** - Green algae

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## **Kingdom Fungi**

**Phylum Ascomycota - Sac Fungi**

**Class Ascomycetes**

**Class Pneumocystidomycetes**

**Class Schizosaccharomycetes - yeasts**

**Class Taphrinomycetes**

**Phylum Basidiomycota - Club Fungi**

**Class Basidiomycetes - true mushrooms**

**Class Urediniomycetes - rusts**

**Class Ustilaginomycetes - smut**

**Class Wallemiomycetes - xerophilic fungi**

**Phylum Zygomycota - zygosporangium**

**Class Trichomycetes**

**Class Zygomycetes**

**Phylum Deuteromycota (Imperfect fungi) - ringworm**

**Subphylum Chytridiomycota**

**Subphylum Glomeromycota**

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## **Kingdom Plantae**

### **Avascular seedless plants:**

**Phylum Anthocerotophyta - hornworts**

**Phylum Hepatophyta - liverworts**

**Phylum Bryophyta - mosses**

**Class Andreaeopsida**

**Class Sphagnopsida**

### **Seedless vascular plants:**

**Phylum Lycophyta - club mosses**

**Phylum Psilophyta - whisk ferns**

**Phylum Sphenophyta - horsetails**

**Phylum Pterophyta - true ferns**

**Class Filicopsida**

**Order Hydropteridales**

**Order Marattiales**

**Order Ophioglossales**

**Order Polypodiales**



## Kingdom Plantae (cont.)

### Seed bearing plants:

#### **Gymnosperms**

**Phylum Cycadophyta** – cycads

**Phylum Ginkgophyta** – ginkgo

**Phylum Gnetophyta** – gnets

**Phylum Coniferophyta (Pinophyta)** - conifers

#### **Order Coniferales:**

**Family Pineaceae**

**Family Abies** (Fir)

**Family Cedrus** (Cedar)

**Family Picea** (Spruce)

**Family Pinus** (Pine)

**Family Tsuga** (Hemlock)

**Family Sequoia** (sequoia)

**Family Juniperus** (Juniper)

### **Seed bearing plants**

#### **Angiosperms**

**Phylum Magnoliophyta (Anthophyta)** - flowering plants

#### **Subclass Magnoliidae**

**Class Magnoliopsida** –Dicotyledons

**Order Amborella** – amboerellas

**Order Nymphaeales** – water lily family

**Order Illiciales** – star anise

**Order Papaverales** - poppy family

**Order Caryophyllales** - cacti

**Order Celastrales** – bittersweet

**Order Cornales** - dogwood family

**Order Magnoliales** – magnolias, tulip trees, nutmeg

**Order Laureles** - laurel trees & shrubs, cinnamon

**Order Piperales**- black & white pepper

**Order Fagales** – oaks, chestnuts, beeches

**Order Aristolochiales** – birthwort

**Order Gentianales** –coffee family

**Order Geraniales** – geranium family

**Order Haloragales** – water milfoil

**Order Euphorbiales** – boxwood family

**Order Rosales** – rose family

**Order Fabales** – milkweed

**Order Ranunculales** - buttercup family

**Order Capparales** – mustard family

**Order Apiales** – carrot family

**Order Nepenthales** – pitcher plants

**Order Hamamelidales** – witch hazel

**Order Trochodendrales** – wheel trees

**Order Scrophulariales** – olive family

**Order Theales** – tea family

## Kingdom Plantae (cont.)

### **Class Liliopsida** - Monocotyledons

**Order Arales** – Duckweed

**Order Commelinales** – Spiderwort

**Order Zingiberaceae**– banana, ginger

**Order Arecanae** – palms

**Order Commelinanae** – grasses & sedges

**Order Araneae** – skunk cabbage, Jack-in-the-pulpit

**Order Alismatales** – agave, aloe, yucca

**Order Poales** – pineapple plant

**Order Asparagales** – onion, garlic, orchids

**Order Liliales** – lilies, tulips

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## Kingdom Animalia

### Invertebrate Animals

**Phylum Placozoa** – simplest of the animals

**Phylum Porifera** – Sponges

**Class Calcarea** – calcified sponge

**Class Hexactinellida** – glass sponge

**Class Desmospongiae** – commercial sponge

**Class Sclerospongiae** – coralline sponge

### Radiate Animals

**Phylum Ctenophores** - Comb jellies

**Phylum Cnidaria**

**Class scyphozoa** – jellyfish

**Class anthozoa** - anemones and corals

**Class hydrozoa** – hydrozoans

### Animals with bilateral symmetry

#### Acoelomate animals

**Phylum Nemertea** - ribbon worms

**Phylum Gnathostomulida** - jaw worms

**Phylum Aschelminthes**

**Class Nematoda** – round worms

**Phylum Platyhelminthes** - flatworms

**Class Turbellaria** – planarians

**Class Monogenea** - parasitic flukes

**Class Trematoda** - flukes

**Class Cestoda** – tapeworms

#### Pseudocoelomates

**Phylum Gastrotricha**

**Phylum Kinorhyncha**

**Phylum Loricifera**

**Phylum Priapulida**

**Phylum Entoprocta** – bryozoans

**Phylum Acanthocephala** – thorny-headed worms

**Phylum Rotifera**

## Kingdom Animalia: Invertebrate Animals: (cont.)

### Coelomate animals

#### **Protostome coelomates:**

**Phylum Mollusca** - snails, bivalves, squid

**Class Gastropoda** - snails, slugs, nudibranchs

**Class Bivalvia** - clams, mussels, & oysters

**Class Cephalopoda** - squid, octopuses, nautilus, & cuttlefish

**Class Polyplacophora** - marine chiton

**Phylum Annelida** - segmented worms

**Class Polychaeta** - bristled worms

**Class Oligochaeta** - earthworms

**Class Hirunidea** - leeches

**Class Pogonophora** - bearded worms

**Phylum Sipuncula** - peanut worms

**Phylum Echiura** - spoon worms

**Phylum Tardigrada** - water bears

**Phylum Arthropoda** - insects, crustaceans

**Class Onychophora** - velvet worms

**Class Pauropoda** - pauropods

**Class Diplopoda** - millipedes

**Class Chilopoda** - centipedes

**Class Insecta** - uniramians

**Order Anoplura** - sucking lice

**Order Coleoptera** - weevils & beetles

**Order Collembola** - springtails

**Order Dermaptera** - the earwigs

**Order Thysanoptera** - thrips

**Order Diplura** - jawed bristle-tails

**Order Ephemeroptera** - mayflies

**Order Odonata** - dragonflies

**Order Plecoptera** - stoneflies

**Order Grylloblattodea** - ice bugs

**Order Orthoptera** - grasshoppers & crickets

**Order Phasmids** - stick insects

**Order Embioptera** - webspinners

**Order Dictyoptera** - roaches & mantids

**Order Isoptera** - termites

**Order Psocoptera** - book lice

**Order Mallophaga** - biting lice

**Order Hemiptera** - true bugs

**Order Neuroptera** - lacewings, dobsonflies, antlions

**Order Mecoptera** - scorpion flies

**Order Lepidoptera** - Butterflies & moths

**Order Trichoptera** - caddisflies

**Order Homoptera** - cicadas, hoppers, & aphids

**Order Diptera** - true flies

**Order Siphonoptera** - fleas

**Order Hymenoptera** - bees, wasps, and ants

## Kingdom Animalia - Phylum Arthropoda: (cont.)

**Subphylum Crustacea** – “insects of the sea”

**Subclass Cephalocarida** - horseshoe shrimp

**Subclass Branchiopoda**

**Order Anostraca** – brine shrimp

**Order Notostraca** – tadpole shrimp

**Order Conchostraca** – clam shrimp

**Order Cladocera** - water fleas

**Subclass Mystacocarida**- mustache shrimp

**Subclass Copepoda** - copepods

**Order Calanoida**

**Order Cyclopoida**

**Order Harpacticoida**

**Subclass Branchiura** - fish lice

**Subclass Ostracoda** - seed shrimp

**Subclass Cirripedia** – barnacles

**Subclass Malacostraca**

**Order Mysidacea** - opossum shrimp

**Order Isopoda** – pill bugs

**Order Amphipoda** – scud

**Order Cumacea** – hooded shrimp

**Order Euphausiacea** – krill

**Order Decapoda**

**Suborder Dendrobranchiata** - prawn

**Suborder Pleocyemata**– shrimp, lobsters & crabs

**Subphylum Chelicerata**

**Class Arachnida**

**Order Acari** – mites & ticks

**Order Opiliones** – daddy long-legs

**Order Uropygi** – whip scorpion

**Order Pseudoscorpiones** – pseudoscorpion

**Order Scorpiones** – scorpion

**Order Araneae** – spiders

**Class Merostomata** – horseshoe crab

**Class Pycongonida** – sea spiders

## Deuterostome Animals

**Phylum Echinodermata**

**Class Asteroidea** – sea stars

**Class Ophiuroidea** – brittle stars

**Suborder Euryalida** – basket stars

**Class Echinoidea** – sea urchins

**Class Holothuroidea** – sea cucumbers

**Class Crinoidea** – sea lilies & feather stars

**Phylum Chordata**

**Subphylum Hemichordata** – acorn worms

**Subphylum Urochordata** – tunicates (sea squirts, salps)

**Subphylum Cephalochordata** – lancelets

## **Kingdom Animalia - Phylum Chordata: (cont.)**

### **Subphylum Vertebrata**

**Superclass Agnatha** – jawless fish

**Class Cephalaspidomorphi** – lamprey eel

**Class Pteraspidomorphi** – hagfish

**Superclass Gnathostomata** – jawed fish

**Class Chondrichthyes** – sharks & rays

**Class Osteichthyes** – bony fishes

### **Class Amphibia**

**Order Apoda** – Caecilians

**Order Caudata** – salamanders

**Order Anura** – frogs

### **Class Reptilia**

**Order Rhynchocephalia** – beaked reptiles

**Order Testudines** – tortoises & turtles

**Order Crocodylia**

**Family Gavialidae** – caimans

**Family Crocodylidae** – crocodiles

**Family Alligatoridae** – alligators

**Order Squamata** – lizards

**Order Serpentes** – snakes

### **Class Aves**

**Order Struthioniformes** – ostriches

**Order Sphenisciformes** – penguins

**Order Procellariiformes** – albatrosses, petrels

**Order Ciconiiformes** – herons, storks

**Order Anseriformes** – swan, geese, ducks

**Order Falconiformes** – eagles, hawks, falcons, vultures

**Order Galliformes** – turkeys

**Order Columbiformes** – pigeons, doves

**Order Strigiformes** – owls

**Order Apodiformes** – hummingbird, swift

**Order Piciformes** – woodpeckers, toucans

**Order Psittaciformes** – parrots, cockatoos, macaws

**Order Passeriformes** – sparrows, finches, jays, crows,  
robins, wrens, starlings

### **Class Mammalia**

**Subclass Prototheria** – egg-laying mammals

**Subclass Metatheria** – pouched mammals

**Subclass Eutheria** – placental mammals

**Order Edentata** – ant-eaters, armadillos, sloths

**Order Insectivora** – shrews, moles, hedgehogs

**Order Chiroptera** – bats

**Kingdom Animalia - Phylum Chordata: (cont.)**

**Order Lagomorpha** – rabbits, hares, pikas

**Order Rodentia** - most gnawing animals (squirrels, rats, mice, porcupines, beavers, ect.)

**Order Carnivora** – wolves, cats, bears, otters, mink, ect.

**Order Pinnipedia** – seals, walruses, sea lions

**Order Proboscidea** – elephant

**Order Sirenia** – sea cows (manatees, dugongs)

**Order Perissodactyla** – odd-toed ungulates (rhinos, horses)

**Order Artiodactyla** – even-toed ungulates (camels, deer, bison, sheep, goats, antelopes, giraffes)

**Order Tubulidentata** – aardvarks

**Order Cetacea** – whales, dolphins, porpoises

**Order Primates**

**Suborder Strepsirhini** – lemurs

**Suborder Haplorhini**

**Infraorder Tarsiiformes** – tarsiers

**Infraorder Platyrrhini** – new world monkeys

**Family Cebidae** – spider monkeys, howler monkeys

**Infraorder Catarrhini** – old world monkeys, hominoids

**Superfamily Cercopithecoidea** – baboons, macaques

**Superfamily Hominoidea** – apes, humans

**Family Hylobatidae** – gibbon

**Family Pongidae** – chimpanzees, gorillas, orangutans

**Family Hominidae** – extinct & extant human species