

Coffeyville Community College

#BIOL-123

COURSE SYLLABUS

FOR

ANATOMY & PHYSIOLOGY

Don Barker

Instructor

COURSE NUMBER: BIOL-123 **COURSE TITLE:** Anatomy and Physiology

CREDIT HOURS: 5

INSTRUCTOR: Don Barker

OFFICE LOCATION: Math/Science Offices, Arts and Sciences Building

OFFICE PHONE: 316-251-7700 ext. 2079

OFFICE HOURS: See office door for posted office hours

PREREQUISITE(S): General Biology or permission of the instructor

REQUIRED TEXTS AND MATERIALS: Barker, Don: *Guide to Anatomy and Physiology*

COURSE DESCRIPTION: This course covers the study of the structure and functions of the parts of the human body.

EXPECTED LEARNER OUTCOMES: Upon completion of this course, the student will be able to:

1. Define “roots” (prefixes and suffixes).
2. Posses knowledge of terms of direction, body planes, and body cavities; understand various aspects of the skeleton, including structure and function; understand the relationship between stimulus(i) and response of a muscle.
3. Know the gross anatomy of the central nervous system and how it functions; understand the senses—sight, hearing, taste, and smell.
4. Relate structure and function within the human heart; relate structure and function of the respiratory tract.
5. Understand structure and function of the digestive tract and metabolism; understand structure and function of the urinary tract and urine.
6. Possess knowledge of the various endocrine glands and their hormones; know the function of the various organs of the male reproductive tract; know the function of the various organs of the female reproductive tract.

LEARNING TASKS & ACTIVITIES:

UNIT I
Skeleton
Articulations
Muscle Systems
Test #1

Lab Test #1

UNIT II

Brain
Nervous Transmission
Spinal Reflex
Special Senses
Test #2
Lab Test #2

UNIT III

Heart
Blood
Gas Exchange and Transport
Test #3
Lab Test #3

UNIT IV

Anatomy of the Digestive System
Energy Metabolism
Body Temperature and Metabolism
Urinary System
Test #4
Lab Test #4

UNIT V

Endocrine Glands
Male Reproductive System
Female Reproductive System
Final Lecture Test (Comprehensive)
Lab Test #5

**ASSESSMENTS OF
OUTCOMES:**

Cognitive: Knowledge and understanding of the material will be assessed through tests which are mainly objective in nature (True/False, Multiple Choice, and Matching questions), with the lab tests being totally recall type tests. 50%

Metacognitive: Each student will be required to show how they can incorporate the cognitive aspects of this material attained from the lectures and labs by reporting laboratory information. 10%

Affective: Attendance and participation in classroom discussions will be directly graded by pop quizzes. 10%

Performance and Skills: The performance and skills learned in this course will be evaluated in the lab tests. 30%

GRADING POLICY:

Grades of A (100-91%), B (90-81%), C (80-71%), D (70-61%), and F (60-0%) are given in this course. Incompletes given at the semester end will only be given if previously agreed upon by the student and instructor with a specific time designated for the completion of the incomplete work. Please note the college's policy on incompletes as stated in the college catalog.

At all times the student must do his/her own work. Do not cheat in any form. Any student found cheating on any test will forfeit the total number of points possible on that event.

Tests must be taken on the scheduled day. **ONLY** if arrangements are made with the instructor prior to the original test date will a student be allowed to take a test at a different time, and then it must be taken **before** the scheduled test. There will be **NO** early/late testing for the lab tests/pop quizzes.

Requirements and final evaluation: A student's final grade will be based on the following (1,300 points). The lowest test score, excluding the cat test, will be dropped.

5 Lecture Tests @ 100 points	500 pts.
1 Root Test	100 pts.
5 Lab Tests @ 100 points	500 pts.
10 Pop Quizzes @ 10 points	100 pts.
Lab Notebook	100 pts.

ATTENDANCE POLICY:

Each student is expected to attend all classes. It is the responsibility of the student to make definite arrangements with the instructor for make-up work **BEFORE** going on a field trip or another college-sponsored event. Class periods, assignments, and tests that are missed without prior arrangements with the instructor may not be made-up unless unusual circumstances prevail and at the instructor's prerogative.

This Syllabus is subject to revision with prior notice to the student by the instructor.

**LECTURE
SCHEDULE:**

Instructor will distribute in class.

LAB SCHEDULE:

Instructor will distribute in class.

PREFIXES, SUFFIXES AND ROOTS USED IN BIOLOGY

a-:	lack, without (asexual)
ab-; abs-:	from, away from; separated (abduct; abscess)
ac-:	sharp, toward (acute; accumulate)
ad-:	to, toward, attached to (adduct)
-aer-:	air (aerobic; anaerobic)
-aesthes-:	feeling (anesthesia)
af-:	toward (afferent)
amyl-:	starch (amylase)
as-:	upward (ascending)
atrio-:	major chamber (atrioventricular)
-atrium-:	vestibule (preatrial)
aud-:	hear (auditory; audiometer)
auri-:	ear (auriscope)
auto-:	self, oneself (autograph; autotrophic)
baro-:	pressure, weight (barometer)
bary-:	heavy (baritone)
bi-:	two, twice (bilobed; biceps)
-bio(s):	life (biology; symbiosis)
-blast-:	sprout, forming (erythroblast; blastoderm)
-blastos-:	germ or forming (erythroblast)
-bol-:	a mass, to throw (bolus; embolism)
brachio-:	arm (brachial; brachial artery)
brachy-:	short (brachycephalic)
-bronchio-:	gill (bronchiomeric; bronchiopod)
brevi-:	short (brevipennate; brevity)
bryein-:	to swell or swarm, teem (embryology)
caecus-:	blind, devoid of light (caecum; caecostomy)
-calci-:	pertaining to lime; spur (calcareous; calcite)
callous-:	hard-thickened (corpus callosum; callus)
-calor-:	heat (caloric)
-cancer-:	crab (cancerous)
-capillus-:	hair, minute tube (capillary)
-cardi-:	heart (pericardium; cardiovascular)
-carn-:	flesh (carnage; carnal)
cata-:	down, downward, against (catabolism)
cauda-:	tail (caudal)
-cele:	cyst, cavity (hydrocele)
-cephale-:	head (cephalic)
-cera-:	wax
cereb-:	brain (cerebellum; cerebrum)
chi:	22 nd letter of Greek alphabet, crossing (chiasma)
-chiro-:	hand (chiropractor)

-chloro-:	green (chlorophyll)
chole-:	bile (cholecystic)
-chondro-:	cartilage, gristle (perichondrium)
-chorion-:	a delicate membrane (chorionic membrane)
-chroma-:	color (chromatograph)
chrono-:	time (chronological)
-cid, -cide, cidal-:	to kill (suicide, fungicidal, bactericidal)
-cili-:	hair (ciliated)
cine-:	motion (cinematograph)
circum-:	around (circumcision)
-cise-:	to cut (excise)
-clast-:	to break, destroy (osteoclast)
-clavis-:	club-like (clavicle)
-cle, -clus, -cule, culus:	small, diminutive (auricle)
co-, com-, con-:	with, together (coagulate; commensal, conjugate)
coll-:	glue (collagen; colloid)
contra-:	counter, against (contrary; contraindicated)
-corn-:	horn, hard (unicorn, cornea; cornified)
corona-:	crown (coronary)
-corp-, -corpus-:	body (corpuscle; corpus callosum)
-cortex-:	outer layer (adrenal cortex; corticotrophic hormone)
-costa-:	rib (costal cartilage; intercostal)
-cune:	wedge (cuneiform)
-cuspis:	a point (tricuspid)
-cyt, cyte-:	cell (lymphocyte)
-cy:	condition of (malignancy)
cyano-:	dark blue (cyanosis)
-cyst-:	bladder (fibrocystic)
de-:	down, away from, not (detoxify, depriving, decant)
dec-:	ten (decade; decimeter)
-dendron-:	treelike (dendrite)
-dent-:	tooth, pointed (dentate; peridont)
-derm-:	skin, layer (ectoderm; dermal; dermatology)
di-:	two - twice (divide)
dia-:	through, between (diameter; dialysis)
dif-:	different, apart, away (differentiate)
dis-:	different, apart, away, negative (disinfect)
diplo-:	two, divided (diploid)
-duct-:	tube, canal, carry (conduct)
dura-:	hard, lasting (dura mater)
-dyna-:	power, viable (dynamo)
dys-:	bad, hard, difficult (dysentery)
e-:	out of, out, from (eject)

ecto-:	outside, external (ectoderm; ectoparasite)
-ectomy:	to cut out (appendectomy)
ef-, ex-:	out (efferent, exit)
electro-:	involving electricity, electron (electrode)
em-:	in, into (embalm)
-emia:	blood (anemia)
endo-:	within, inner (endoderm; endocardium)
enter-:	to go in (enterprise)
entero-:	intestine (enteritis)
epi-:	upon, on the surface (epidermis)
erythro-:	red (erythrocyte)
extra-:	beyond, outside of (extracellular)
-fer:	to bear, to carry (transfer; infer)
-flex-, flect-:	to bend, to fold (flexion; inflection)
-flor-:	flower (inflorescence)
forare-:	a small opening (foramen)
fovea:	a small pit (fovea centralis)
fract-, fractio-:	to break (fracture)
gala-:	milk (galactose)
-gastric-:	stomach (epigastric)
-gen-:	producing, beginning, (genesis, collagen)
-glosso-:	tongue (glossopharyngeal; hypoglossal)
glyco-:	sugar (glycose)
-gnosis:	knowledge (diagnosis)
-gram:	letter or record (electrocardiogram)
graph-:	writing (kymograph)
gyn-:	woman (gynecology)
hemato-, hemo-:	blood (hematology)
hemi-:	half (hemisphere)
hepato-:	liver (hepatic)
hetero-:	varied (heterogenous)
histo-:	tissue web (histology)
homo-:	same (homology)
hydro-:	water (hydroscopic)
hyper-:	above or over (hypertrophic)
hypo-:	below or under (hypodermic)
iasis-:	condition of (amebiasis)
in-:	not or less (insufficient)
infer-:	below (inferior)
infra-:	below (infraorbital)
ir-:	not (irregular)
-ic:	pertaining to (anemic)
iso-:	same (isotonic)

-itis:	inflammation (appendicitis)
kin-:	moving (kinetic)
kymo-:	wave (kymograph)
lac-:	milk (lactose)
leuco-:	white (leucocyte)
lip-:	fat (lipid)
-logy:	knowledge of study (physiology)
-lysis:	dissolving (hemolysis)
macro-:	large (macrophage)
mal-:	bad (malnutrition)
meso-:	middle (mesoderm)
meta-:	beyond, change, or transformation (metacarpal, metamorphosis)
meter-, metro-:	measure (thermometer)
micro-:	small (microorganism)
mole-:	body (molecule)
mono-:	one (monocyte)
morpho-:	body, shape, form (morphology)
multi-:	many (multipolar)
myo-:	muscle (myogenic)
necro-:	death (necrosis)
-oid:	like (lipoid)
-ole:	small (bronchiole)
-oma:	tumor (fibroma)
-ose:	sugar (glucose)
-osteo-:	bone (osteocyte; periosteum)
-otomy:	cutting into (osteotomy)
ovi-:	egg (oviduct)
para-:	beside (parathyroid)
patho-:	disease (pathology)
-pathy:	disease (neuropathy)
per-:	through, excessively (permeate)
peri-:	around (pericardium)
phago-:	eating (phagocyte)
-phil:	loving (hemophilia)
phobia-:	fear (hydrophobia)
physio-:	nature (physiology)
-plasm:	form (cytoplasm)
-pnea:	breathing (apnea)
pneumo-:	lung (pneumonia)
poly-:	many (polyuria)
post-:	behind, after (posterior, post-surgery)

pre-:	before (premature)
proto-:	first (protoplasm)
pseudo-:	false (pseudopodia)
psycho-:	mind (psychology)
pulmo-:	lung (pulmonary)
re-:	back (regeneration)
retro-:	backward (retroversion)
-renal:	kidney (renal artery; suprarenal)
-rrhage:	bursting forth (hemorrhage)
rhino-:	nose (rhinoscope)
sarco-:	flesh (sarcolemma)
sclero-:	hard (sclerosis)
-scope:	vision (microscope)
semi-:	half (semicircular)
sub-:	below (subclavian)
-some:	body (chromosome)
super-, supra-:	above (suprascapula)
syn-:	binding together (synapse)
thermo-:	heat (thermometer)
-tome:	cutting (microtome)
tox-:	poison (toxemia)
trans-:	across (transverse)
-trophy:	nourishment (atrophy)
-ule, -ulus:	small (molecule)
ultra-:	beyond, in excess (ultrafiltration)
un-:	not (undifferentiated)
-uria:	urine (glycosuria)
vaso-:	vessel (vasodilation)
vermis-:	worm (vermiform)

COMPETENCIES: Upon completion of the course, the following should be accomplished by the student:

GIVEN A LIST OF “ROOTS” (PREFIXES AND SUFFIXES), EACH ONE SHOULD BE DEFINED

KNOWLEDGE OF TERMS OF DIRECTION, BODY PLANES, AND BODY CAVITIES

1. Define given terms of direction.
2. Define given skeletal structures.
3. List and describe the three major body planes.
4. Describe the organs associated with respective body cavities.

UNDERSTAND VARIOUS ASPECTS OF THE SKELETON, INCLUDING STRUCTURE AND FUNCTION

5. Explain bone functions.
6. Define bone terms.
7. List and explain the major bone systems—Axial and Appendicular skeletal systems.
8. List the three basic categories of joints.
9. Explain how one classifies the joints as to respective categories.
10. Differentiate between various types of joint movements such as flexion, extension, etc.
11. Explain joint disorders—Dislocation, Sprain, and Arthritis.

UNDERSTAND THE RELATIONSHIP BETWEEN STIMULUS(I) AND RESPONSE OF A MUSCLE

12. List the characteristics of skeletal muscle.
13. Define muscle attachment locations.
14. Contrast antagonistic muscles to synergistic muscles.
15. Diagram and label a muscle contraction.
16. Expand upon subthreshold, threshold, and maximal stimuli and their respective response.
17. Explain the All-Or-None Law of skeletal muscle contractions.

KNOW THE GROSS ANATOMY OF THE CENTRAL NERVOUS SYSTEM AND HOW IT FUNCTIONS

18. Draw and diagram a nerve cell (neuron).
19. Diagram and explain the components of a simple reflex arc.
20. Calculate the velocity of nervous transmissions.
21. List and define various structures of the human brain.
22. State the twelve pair of cranial nerves as to number, name, and action.
23. Describe various diseases of the central nervous system.

UNDERSTAND THE SENSES—SIGHT, HEARING, TASTE, AND SMELL

24. List ways in which the eye is protected.
25. List and explain the parts of the eye.
26. Contrast myopia, hyperopia, and astigmatism and ways to correct them.
27. Explain the role of the nose and tongue as sensory organs.
28. List and explain the composition of the three ear divisions.

RELATE STRUCTURE AND FUNCTION WITHIN THE HUMAN HEART

29. List general characteristics of the heart.
30. Differentiate between pulmonary and systemic circulation.
31. Diagram and explain the electrical system of the heart.
32. Relate to the two natural heart sounds.
33. Diagram and explain an EKG (ECG).
34. Describe blood pressure and hypertension.
35. Diagram and establish relationships with flow, pressure, and resistance.
36. Diagram and establish relationships with velocity of circulatory fluids, vessel diameter, and total cross-sectional area.
37. Briefly explain how arterial elasticity aids in the maintenance of arterial pressure.
38. Differentiate between arteriosclerosis and atherosclerosis.
39. Explain aneurysms.
40. Describe blood composition as to formed elements.
41. Describe the blood types.
42. Define anemia and list various types.
43. Explain variations in blood volume as to gender and location.
44. Diagram and explain blood clotting.
45. Contrast an embolus and a thrombus.
46. Define plasma and list its component part.

RELATE STRUCTURE AND FUNCTION OF THE RESPIRATORY TRACT

47. Diagram and explain the anatomy of the respiratory tract.
48. Describe oxygenation of the blood.

STRUCTURE AND FUNCTION OF THE DIGESTIVE TRACT AND METABOLISM

49. Explain the anatomy of the digestive tract from the oral cavity to the anal opening.
50. Contrast constipation and diarrhea.
51. Explain the metabolic significance of glycolysis and Krebs's cycle.
52. List end products produced by glycolysis and Krebs's cycle.
53. Show the significance of enzymes in relation to energy pathways.
54. List the avenues of heat loss from the human body.

STRUCTURE AND FUNCTION OF THE URINARY TRACT AND URINE

55. Give characteristics of a kidney.
56. Diagram anatomically a single nephron.
57. Describe the structure and define the function of the ureters, urinary bladder, and urethra.
58. List the primary constituents of urine.
59. List urine characteristics.
60. List and define various urological terms.

POSSESS KNOWLEDGE OF THE VARIOUS ENDOCRINE GLANDS AND THEIR HORMONES

61. Define an endocrine gland and a hormone.
62. Name the various hormones produced by the anterior pituitary gland and the effects of hormones upon the body.
63. Describe the thyroid gland and its functions.
64. State the action of thyroxin.
65. List conditions caused by abnormal secretions of thyroxin.
66. Describe the functions of the hormones produced by the posterior pituitary gland.
67. Describe the action of parathormone.
68. List the effects of vitamin D.
69. Describe the effects of the adrenal gland medulla upon the body.
70. State where insulin is produced and its effect upon the body.
71. Briefly explain the effects of the hormones produced by the gonads.
72. Explain the effect of thymosin.
73. Describe the hormone produced by the placenta.

KNOW THE FUNCTION OF THE VARIOUS ORGANS OF THE MALE REPRODUCTIVE TRACT

74. List, describe, and tell the function of the various male reproductive organs.
75. Explain the ejaculatory process.

KNOW THE FUNCTION OF THE VARIOUS ORGANS OF THE FEMALE REPRODUCTIVE TRACT

76. Explain oogenesis.
77. List, describe, and tell the function of the various female reproductive organs.
78. Describe the breasts and their function.
79. Explain the importance of estrogen and progesterone in the menstrual cycle.
80. Describe menopause.
81. Explain the process of gestation.
82. Explain the process of birth (parturition).
83. List and explain various methods of birth control.