

# Syllabus for Physiology 31 – Part A

(Mon – Wednesday Classes)

Room: NATS 123

All Sections  
Office Hours are: M/W - 12:00 PM to 1:00 PM  
T/Th - 10:45 PM to 11:15 PM

Dr. S. Trench  
310 660-3593 X3355  
Office Hours are  
By Appointment

## COURSE POLICY

### Attendance:

FOUR absences are the traditional maximum permitted for a four unit course.

THREE tardies are equivalent to an absence.

FOUR absences or a combination of tardies and absences that equal four absences puts the student on a warning status.

On the FIFTH absence, the student will be required to drop the course. Any deviation from this policy MUST be cleared with the instructor.

Please be certain to occupy your regular seat as signed on the lab. sheet and class seating chart. Failure to do so may result in you being marked absent. If you are late, be sure to notify the instructor at the end of the period otherwise you may be marked absent. **Don't leave it to the next day!**

Remember, It is the student who is responsible to officially drop the class INCLUDING completion of a laboratory drop card filed with the technician.

### Evaluation:

Evaluation will be based on the work or skills demonstrated from FOUR course areas (papers optional)

Areas:	LECTURE TESTS (5)* (Required)	- 50% (40 + HW)
	LAB. TESTS (5)* (Required)	- 50% (40 + Lab R)
	HOMEWORK (Optional)	- 10% (can be added to lab or lecture tests)
	LAB. REPORTS (Optional)	- 10% (can only be added to lab tests)
	Two PAPERS (with Bibliography) (Optional)	- 2% added on to the final total

\* NB. - A test may be dropped, at the discretion of the Instructor, only if ALL tests for a section are taken and a notable improvement in performance is demonstrated!  
- If a test is missed, it will be assigned a 0% grade and averaged in with the other 4 tests! This applies to both lab. and lecture tests!

Lecture tests can be made up **on the FIRST day** the student returns. Further, the test **MUST** be made up within one week of the original test date.

All lecture and lab, tests will usually be done within the lecture period of the class schedule.

Students **MUST obtain a passing grade in both the lab. and lecture sections** of the course. Failure to do so limits the maximum overall grade obtainable to a 'D'. (Remember that a course grade above a 'D' cannot be repeated).

Students are expected to purchase their own SCANTRON sheets from the book store prior to the actual test period. Check with your instructor as to the type of SCANTRON to be used. (Generally # 882 ES for lecture tests and for surprise quizzes. A #884 ES will be needed for test 5).

Please note that NO **ELECTRONIC LANGUAGE DICTIONARIES are permitted** during test periods. A book language may be permitted only if submitted for inspection one day prior to the test day. **Any form of earphones or other electronic devices are NOT permitted during the test period!!**

### Safety Rules:

- 1.- **No food or drink is permitted** in the class at any time.
- 2.- Appropriate attire and footwear are required for your own safety.
- 3.- Due to liability concerns, college policy **prohibits children, relatives or friends** in the regular classes or labs. This policy also applies to the 'open labs.
- 4.- You do NOT have a right to disrupt the class. Your personal contacts are denying 36 other students the right to learn. Therefore no active mobiles (cell phones) are not permitted in these classes! **Turn off all mobiles (cell phones) before entering the class. Failure to do so may result in you being dropped from the course!**

# PHYSIOLOGY 31

## COURSE TEXTS & MATERIALS

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| <ol style="list-style-type: none"> <li>1. HUMAN PHYSIOLOGY - Dee Unglaub Silverthorn (Fox - a good alternate)</li> <li>2. Anatomy &amp; Physiology Lab Manual 9<sup>TH</sup> Ed. (You require a current PhysioEx CD-Rom or an online alternative)</li> <li>3. Support Kit (Physiology Interactive Lab Simulations)</li> </ol> |
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### LECTURE SCHEDULE (tentative)

CLASS Days	MAJOR TOPICS	READINGS & HOMEWORK (Suggested) (Based on Sherwood)
1 & 2	Introduction & Orientation Anatomical Organization of the Body Homeostasis Control Mechanisms	Chapters 1 & 2 // Problem Solving Sheets I to VI (Readings) (Homework)
2 & 3	Homeostasis Control Mechanisms (cont) Basic Chemistry & the Chemistry of Life Cell Structure & Function	Chapters 3 & 4 // Lab Reviews 3, 4, 5A, 5B (1) (Readings) (Homework)
4 & 5	Cell Structure & Function (cont) Regulation & Transport Mechanisms Cell Control Mechanisms	Chapters 5 & 6 // Inorganic & Organic Chemistry Reviews (Readings) (Homework)
6	UNIT ONE - LECTURE TEST 1 & LAB PRACTICUM 1	Based on Class Days: 1, 2, 3, 4 & 5
7 & 8	Cell Communication – Primary & secondary Muscle type, structure & function Structure & function of the Nervous system	Chapters 12, 8, & 9 // Problem Solving Sheets VII to XI (Readings) (Homework)
9 & 10	Spinal cord, & its structure & function Production and function of CSF Structure & function of the Brain & its components	Chapters 10 & 11 // Lab Reviews 22, 23, 24, 25, 26 (Readings) (Homework)
11 & 12	Autonomic Nervous System Sensory Systems & their methods of transduction Endocrine System	Chapters 13 & 7 // Lab Reviews 16B (2), 18B (3), 28B (4) (Readings) (Homework)
13	UNIT TWO - LECTURE TEST 2 & LAB PRACTICUM 2	Based on Class Days: 7, 8, 9, 10, 11, & 12
14 & 15	Cardiovascular System Blood formation & function Heart & Vessel: Structure & Function	Chapter 16 // Problem Solving Sheets XII to XV (Readings) (Homework)
15 & 16	Heart & Vessels. Cardiovascular disorders	Chapters 14 & 15 // Lab Reviews 29A, 31A, 33A, 35A (Readings) (Homework)
17 & 18	Immune System: Structure & Function	Chapter 24 // Lab Rev 29B (11), 33B (5), 34B (6), 35B (12) (Readings) (Homework)
19	UNIT THREE - LECTURE TEST 3 & LAB PRACTICUM 3	Based on Class Days: 14, 15, 16, 17 & 18
20 & 21	Respiratory System: Structure & Function	Chapters 17 & 18 // Problem Solving Sheets XVI to XX
21 & 22	Control mechanisms, gas transport, & disorders	Chapter 19 // Lab Reviews 37A, 41A (Readings) (Homework)
23 & 24	Renal System: Structure & Function	Chapter 20 // Lab Reviews 37B (7), 41B (9), 47B (10) (Readings) (Homework)
25	UNIT FOUR - LECTURE TEST 4 & LAB PRACTICUM 4	Based on Class Days: 20, 21, 22, 23 & 24
26 & 27	Digestive System: Structure & Function	Chapters 21 & 22 // Problem Solving Sheets XXI to XXVIII (Readings) (Homework)
27 & 28	Reproductive System: Structure & Function	Chapters 23 & 25 // Lab Reviews 39A, 43, 45, 49B (8) (Readings) (Homework)
28 & 29	Patterns of Inheritance, Genetic s & Equilibrium	Chapter 26 // Genetic Problem Solving Sheets (Readings) (Homework)
30	UNIT FIVE - LECTURE TEST 5 & LAB PRACTICUM 5	Based on Class Days: 26, 27, 28, & 29
31	Review and Conference	

# Fall Physiology 31 Classes

2009 (Monday - Wednesday)

## Point Grading Scale for all Tests:

A = 88 - 100	B = 75 - 87	C = 62 - 74	D = 50 - 61	F = 0 - 49
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## LAB. SCHEDULE

DATE	CLASS	ACTIVITY
(M/W) 8/31/09	1	A1. - Lab Manual Chapter 1 - Metrics, Measurements, & Computations
(M/W) 9/2/09	2	A2. - Lab Exercise Handout – Microscopy
(M/W) 9/9/09	3	A3. - Lab Exercise Handout - Molecules of Life Lab
(M/W) 9/14/09	4	A4. - Lab Exercise Handout - Physical Processes of Biological Importance
(M/W) 9/16/09	5	A5. ⇄ - Lab Exercise Handout - Physical Processes of Biological Importance - PhysioEx 5B (#1)
(M/W) 9/21/09	6	Lecture Test 1 & Lab Practicum 1 (Class Days 1, 2, 3, 4 & 5)
(M/W) 9/23/09	7	B1 ⇄ - Marieb Ex 16A (Activity 4) – BioPac (Electromyography) - PhysioEx 16B (#2) (Muscle Physiology)
(M/W) 9/28/09	8	B2. - Marieb Ex 22 (All Activities) (Reflexes), Marieb Ex 23 (All Activities) (Sensations)
(M/W) 9/30/09	9	B3. - Marieb Ex 24 (Activity 1-13) (Vision)
(M/W) 10/5/09	10	B4. - Marieb Ex 25 (All Act) (Hearing & Bal), Marieb Ex 26 (All Activities) (Smell & Taste)
(M/W) 10/7/09	11	B5. - Lab Exercise Handout - Cranial Nerve Assessment
(M/W) 10/12/09	12	B6. ⇄ - PhysioEx 18B (#3)(Neurophysiology of Impulses) - PhysioEx 28B (#4) (Endo Physiology)
(M/W) 10/14/09	13	Lecture Test 2 & Lab Practicum 2 (Class Days 7, 8, 9, 10, 11 & 12)

DATE	CLASS	ACTIVITY
(M/W) 10/19/09	14	C1. - Lab Exercise Handout – Red & White Blood Cell Counts
(M/W) 10/21/09	15	- PhysioEx 29B (#11) (Blood Analysis) C2. ⇄ - PhysioEx 33B (#5) (Cardiovascular Dynamics)
(M/W) 10/26/09	16	C3. - BioPac Marieb Ex 31 (Act 1b) (EKGs) & Ex 33A (Act 3) (Pressures & Pulse)
(M/W) 10/28/09	17	C4. - Marieb Ex 33A (All Activities) (Cardiovascular)
(M/W) 11/2/09	18	- PhysioEx 34B (#6)(Cardio Physiology) C5. ⇄ - PhysioEx 35B (#12) (Serological Testing)
(M/W) 11/4/09	19	Lecture Test 3 & Lab Practicum 3 (Class Days 14, 15, 16, 17 & 18)
(M/W) 11/9/09	20	D1. - Marieb Ex 37A (All Activities) (Respiratory System)
(M/W) 11/11/09	21	- PhysioEx 37B (#7)(Respiratory Mechanics) D2. ⇄ - PhysioEx 41B (#9) (Renal Physiology)
(M/W) 11/16/09	22	D3. - BioPac Marieb Ex 37A ( Act 5 – Page 412) (Respiratory Volumes)
(M/W) 11/18/09	23	D4. - Lab Exercise Handout - Urinalysis
(M/W) 11/24/09	24	D5. - PhysioEx 47 (#10) (Acid-Base)
(M/W) 11/25/09	25	Lecture Test 4 & Lab Practicum 4 (Class Days 20, 21, 22, 23 & 24)
(M/W) 11/30/09	26	E1. - Marieb PhysioEx 39B (#8)(Chemical & Physical Process of Digestion)
(M/W) 12/2/09	27	E2. - Marieb Ex 39A (All Activities Possible) (Chemical & Physical Digestion)
(M/W) 12/7/09	28	E3. - Marieb Ex 45 (All Activities Possible) (Heredity) + Lab 9 Genetic Problems
(M/W) 12/9/09	29	E4. - Lab Exercise Handout – Lab 8 Heredity
(M/W) 12/14/09	30	Lecture Test 5 & Lab Practicum 5 (Class Days 26, 27, 28, & 29)
(M/W) 12/16/09	31	Review and Conference

# Summary of Lab & HW Assignments

## (1) Assigned Homework - 2009

### Unit I

- 1.- Chemistry Review Sheets – inorganic and organic, Liquid Mixtures (5 pts)  
 2.- Lab Manual Review Exercises 3, 4, 5A, 5B (1) (4 Pts) 15 pts  
 3.- Problem Solving Sheets I-VI (6 pts)

### Unit II

- 1.- Lab Manual Review Ex. 22, 23, 24, 25, 26, 16B (2), 18B (3), 28B (4) (8 pts) 13 pts  
 2.- Problems Solving Sheets VII-XI (5pts)

### Unit III

- 1.- Lab Man Rev Ex. 29A, 31, 33A, 29B (11), 33B (5), 34B (6), 35B (12) (7 pts) 11 pts  
 2.- Problems Solving Sheets XII-XV (4 pts)

### Unit IV

- 1.- Lab Manual Review Ex. 37A, 41A, 37B (7), 41B (9), 47B (10) (5 pts) 10 pts  
 2.- Problems Solving Sheets XVI-XXI (5 pts)

### Unit V

- 1.- Lab Manual Review Exercises 39A, 43A, 45A, 39B (8) (4 pts)  
 2.- Problems Solving Sheets XXI-XXVIII (8 pts)

12 pts  
 Total: 61 pts

## (2) Laboratory Assignments

<i>Unit I</i>	<i>Lab Handout 1 (SI) , Lab Handout 2 (Microscope), Physio X 5B (1) Lab Handout 3 (Molecular Models), &amp; Lab Handout 4 (Bio Import)</i>	<i>5 Labs</i>
<i>Unit II</i>	<i>PhysioX 16B (2), 18B (3), 28B (4), Lab Manual Ex 22, 23, 24, 25, 26 Lab Handout 5 (Cranial Assessment), BioPac 16A Activity 4</i>	<i>10 Labs</i>
<i>Unit III</i>	<i>PhysioX 29B (11), 33B (5), 34B (6), 35B (12), Lab Manual 33A, Lab Handout 6 (Blood), BioPac 31A Activity 1b (1a as substitute)</i>	<i>7 Labs</i>
<i>Unit IV</i>	<i>PhysioX 37B (7), 41B (9), 47B (10), Lab Manual Ex 37A, Lab Handout 7 (Urinalysis), BioPac 37A Activity 5</i>	<i>6 Labs</i>
<i>Unit V</i>	<i>PhysioX 39B (8), Lab Manual Ex 39A, 45A Lab Handout 8 (Human Genetics – 2 Labs) Lab Handout 7 Problems - Work sheet (1 Lab or 2 Homeworks)</i>	<i>6 Labs</i>

*Total 34 Labs*

# PHYSIOLOGY TOPICS

## UNIT ONE

Integration & Co-ordination, Homeostasis, Inorganic & Organic Chemistry Review, Molecular Bonds and Molecular Shapes, Aqueous Solutions, Acids, Bases & Bio-Buffer Systems, Biochemical interactions, Protein Interactions and Modulation, Cells & Tissues, Biological Membranes, Transport Mechanisms & Membrane Dynamics, Cell Life-Cycles, Reproduction, Apoptosis, etc., Bio-energetics, Metabolism, Enzymes, Synthetic Pathways & DNA Replication.

## UNIT TWO

Integrative Physiology & Control of Body Movement, Physiology of Muscles – Skeletal & Smooth, Physiology of Neurons, Membrane dynamics, Nernst & GHK Equations, Ion Movement & Action potentials – Generation & Termination, Forms of Conduction, Trigger Zones, Graded Potentials, Gial Cells & their Function, Forms of Summation, Cell Communication and Neural Circuits, Neural Transmitters and Post-Synaptic Membrane Sensitivity, Neuro-hormones, Secondary Messengers, Structure & Function of the Peripheral, Central, and Enteric NS, Reticular Formation, Sensory Physiology, Sensory Modalities –General, Somatic, Chemo, Smell, Taste, Hearing, Equilibrium, Vision, Autonomic vs. Somatic NS, Homeostasis & Reflexes, Types of Reflexes, Endocrine Interactions with the Central NS and with the Body, Classification of Hormones, Modes of Action and Interactions, Pathologies of the Endocrine and Nervous Systems.

## UNIT THREE

Cardiovascular Physiology, Plasma and Cellular Elements, Blood Measurements, Blood Production and Regulation, Maturation, Oxygen Transport, Blood Chemistry, Coagulation, Blood Disorders, Cardiac Development and Function, Developmental Disorders, Pressure, Volume, Flow, and Resistance within the System, Ischemia and its affect on the CVS, Physiology of Cardiac Muscle, Cardiac Ion Channels, Resting Potentials of various Cardiac Centers, Electro-chemo-conduction of the heart, Cardiac sounds & rhythms, Gallops, Clicks, & Murmurs, Cardiac Performance & Hemo-dynamics, Aging of the CVS, ECG, Endocrine & NS Cardiac Interactions, Contractility & Stroke-Volume, Control of Blood Pressure & Disorders, Vessel Structure & Function, Structure & Function of Lymphatic System, Cellular Components and their roles, Forms of Immunity, Immune Response & Pathways, Neuro-endocrine interactions, Antigen-Antibody Complexes, Allergic Responses, MHC proteins, Specific & Non-specific Defenses, Complement, Immuno-surveillance, Immuno-testing.

## UNIT FOUR

Structure & Function of the Respiratory System, Gas Laws, Ventilation Forms & Rates, La Place & Surface Tension, Breathing & Airway Dynamics, Lung Capacities & Volumes, Gas Compositions in RT, Auscultation & Spirometry Assessments, Ventilation & Blood Flow Ratios, Lung Compliance & Obstructive Disorders, Solubility & Diffusion of Gases, Influences on O<sub>2</sub> & CO<sub>2</sub> carrying ability of Blood, Effects of 2,3DPG, Bohr, Haldene, Breathing Pathologies, CNS Control Centers, Respiratory & Metabolic Acidosis & Alkalosis, Structure & Functional Units of the Kidney, Process & locations of Filtration, Secretion, Re-absorption, Pressure Dynamics of the Kidney, GFR & Auto-regulation, Renal Clearance, Neuro-Hormonal Control over Clearance, Fluid & Electro Homeostasis.

## UNIT FIVE

Structure & Function if the GI System, Methods of Motility, Secretion, Digestion & Absorption, Gastric Phases, Neural and Hormonal regulation, Interactions with other Systems, Metabolism & Energy Balance, Homeostatic Interactions, Structure, Development, & Function of the Reproduction System, Meiosis & Gamete Formation, Reproductive Cycles, Interactions with the Nervous & Endocrine systems, Fertilization & Embryonic Development, Genetics & its Interactions with Development of the Individual and Evolution of the Population, Role of Mendel & Darwin and their Laws, Evolution & Development, Patterns of Inheritance, Probabilities, Hardy-Weinberg Laws & Gene Frequencies, Common Digestive, Reproductive, & Genetic Disorders – their Physiology and their possible Treatments.

*The End - What a Pity!!!!*