

Syllabus for Physiology 31 – Part A

Room: NATS 123

All Sections

Dr. S. Trench
610 660-3355
Office Hours TBA

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

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

Note that **missed lab. tests (practicals) CANNOT be made Up and will be assigned a grade of zero!!**

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'

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.

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

1. HUMAN PHYSIOLOGY - An Integrated Approach, Third Edition: Dee Unglaub Silverthorn OR Sherwood (a good alternate)
2. Anatomy & Physiology Lab Manual 8 TH Ed. (Must Include PhysioEx 6.0 CD-Rom) : Marieb
3. Support Kit (Physiology Interactive Lab Simulations)

LECTURE SCHEDULE (tentative)

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

Fall Physiology 31 Classes

2007

LAB. SCHEDULE

DATE	CLASS	ACTIVITY
(M/W) 8/27/07	1	A1. - Lab Manual Chapter 1 - Metrics, Measurements, & Computations
(M/W) 8/29/07	2	A2. - Lab Exercise Handout – Microscopy
(M/W) 9/05/07	3	A3. - Lab Exercise Handout - Molecules of Life Lab
(M/W) 9/10/07	4	A4. - Lab Exercise Handout - Physical Processes of Biological Importance
(M/W) 9/12/07	5	- Lab Exercise Handout - Physical Processes of Biological Importance A5. ⇔ - PhysioEx 5B
(M/W) 9/17/07	6	Lecture Test 1 & Lab Practicum 1 (Class Days 1, 2, 3, 4 & 5)
(M/W) 9/19/07	7	- Marieb Ex 16A (Activity 4) – BioPac (Electromyography) B1 ⇔ - PhysioEx 16B (Muscle Physiology)
(M/W) 9/24/07	8	B2. - Marieb Ex 22 (Act 1-9) (Reflexes), Marieb Ex 23 (Act 1-7) (Sensations)
(M/W) 9/26/07	9	B3. - Marieb Ex 24 (Activity 1-13) (Vision)
(M/W) 10/01/07	10	B4. - Marieb Ex 25 (Act 1-7) (Hearing & Bal), Marieb Ex 26 (Act 1-7) (Smell & Taste)
(M/W) 10/03/07	11	B5. - Lab Exercise Handout - Cranial Nerve Assessment
(M/W) 10/08/07	12	- PhysioEx 18B (Neurophysiology of Impulses) B6. ⇔ - PhysioEx 28B (Endo Physiology)
(M/W) 10/10/07	13	Lecture Test 2 & Lab Practicum 2 (Class Days 7, 8, 9, 10, 11 & 12)

DATE	CLASS	ACTIVITY
(M/W) 10/15/07	14	C1. - Lab Exercise Handout – Red & White Blood Cell Counts
(M/W) 10/17/07	15	C2. - PhysioEx 29B (Blood Analysis) & PhysioEx 33B (Cardiovascular Dynamics)
(M/W) 10/22/07	16	C3. - BioPac Marieb Ex 31 (Act 1b) (EKGs) & Ex 33A (Act 3) (Pressures & Pulse)
(M/W) 10/24/07	17	C4. - Marieb Ex 33A (Activities 1, 2, 4, 5, 6, 7) (Cardiovascular)
(M/W) 10/29/07	18	C5. - PhysioEx 34B (Cardio Physiology) & PhysioEx 35B (Serological Testing)
(M/W) 10/31/07	19	Lecture Test 3 & Lab Practicum 3 (Class Days 14, 15, 16, 17 & 18)
(M/W) 11/05/07	20	D1. - Marieb Ex 37A (All Activities Possible) (Respiratory System)
(M/W) 11/07/07	21	D2. - PhysioEx 37B (Resp Mechanics), PhysioEx 41B (Renal Phys)
(M/W) 11/14/07	22	D3. - BioPac Marieb Ex 37A (Act 5 – Page 412) (Respiratory Volumes)
(M/W) 11/19/07	23	D4. - Lab Exercise Handout - Urinalysis
(M/W) 11/21/07	24	D5. - PhysioEx 47 (Acid-Base)
(M/W) 11/26/07	25	Lecture Test 4 & Lab Practicum 4 (Class Days 20, 21, 22, 23 & 24)
(M/W) 11/28/07	26	E1. - Marieb PhysioEx 39B (Chemical & Physical Process of Digestion)
(M/W) 12/03/07	27	E2. - Marieb Ex 39A (All Activities Possible) (Chemical & Physical Digestion)
(M/W) 12/05/07	28	E3. - Marieb Ex 45 (All Activities Possible) (Heredity)
(M/W) 12/10/07	29	E4. - Lab Exercise Handout - Heredity
(M/W) 12/12/07	30	Lecture Test 5 & Lab Practicum 5 (Class Days 27, 28, 28, 29, & 30)

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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Physiology 31

Assigned Homework - 2007

Unit I

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|---|--------|
| 1.- Chemistry Review Sheets – inorganic and organic (4 pts) | |
| 2.- Lob Manual Review Exercises 3, 4, 5A, 5B (4 Pts) | 14 pts |
| 3.- Problem Solving Sheers I-VI (6 pts) | |

Unit II

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

Unit III

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| 1.- Lab Manual Review Exercises 29A, 31, 33A, 29B, 33B, 34B, 35B (7 pts) | 11 pts |
| 2.- Problems Solving Sheets XII-XV (4 pts) | |

Unit IV

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

Unit V

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|--|--------|
| 1.- Lab Manual Review Exercises 39A, 43A, 45A, 39B (4 pts) | |
| 2.- Genetic Problems (2 pts) | 14 pts |
| 2.- Problems Solving Sheets XXI-XXVIII (8 pts) | |

Total: 62pts

Laboratory Assignments

Unit I	Lab Handout 1 (SI) , Lab Handout 2 (Microscope), Physio X 5B Lab Handout 3 (Molecular Models), & Lab Handout 4 (Bio Import)	5 Labs
Unit II	PhysioX 16B, 18B, 28B, Lab Manual Ex 22, 23, 24, 25, 26 Lab Handout 5 (Cranial Assesement), BioPac 16A Activity 4	10 Labs
Unit III	PhysioX 29B, 33B, 34B, 35B, Lab Manual 33A, Lab Handout 6 (Blood), BioPac 31A Activity 1b (1a as substitute)	7 Labs
Unit IV	PhysioX 37B, 41B, 47B, Lab Manual Ex 37A, Lab Handout 7 (Urinalysis), BioPac 37A Activity 5	6 Labs
Unit V	PhysioX 39B, Lab Manual Ex 39A, 45A Lab Handout 8 (Human Genetics – 2 Labs)	5 Labs

Total 33 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 O₂ & CO₂ 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!!!!