

**Steven A. Fink; Instructor**  
**FALL 2015**  
**MW 3:25 - 6:40**  
**sec. #1730**  
**OFFICE HOURS: 6:40-7:00 PM [MSA-211]**

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# **HUMAN PHYSIOLOGY**

**Minimum Prerequisite: College Biology and/or Microbiology AND Human Anatomy with a grade of “C” or better AND eligibility for English 101. . Strongly Recommended: College Chemistry AND completion of College Biology, Anatomy and Microbiology – all with a “B” or better.**

Physiology is a very rigorous course that requires considerable discipline, time and dedication. Students are expected to learn large amounts of material. A significant number of students find the course overwhelming and may drop or fail.

**Course Description:** This course presents the biochemical & biophysical principles underlying the physiological processes of the human. Lecture topics include the electrical properties of tissue cells, chemical influences on cell function, neural & hormonal regulation of bodily processes, and the integration of the organ systems to maintain a constant fluid environment within the body. Special emphasis will be placed on the evaluation of body temperature, blood pressure, breathing, and urine output, as well as the interpretation of clinical laboratory tests.

Laboratory exercises will introduce the student to the spectrophotometer, EKG machine, blood pressure cuff, and urinalysis tests. This course is intended to meet the requirements of students majoring in nursing, dental hygiene, occupational therapy, psychology, kinesiology, and life sciences, or for those who wish to extend their knowledge of the human body.

**Student Learning Objectives:** A student who completes this class will be able to explain:

- (1) electrical properties of tissue cells
- (2) neural & hormonal regulation of bodily processes
- (3) the control of body temperature, blood pressure, breathing & urine output
- (4) the use of clinical laboratory tests in the diagnosis & treatment of disease
- (5) the homeostatic reflexes in response to hypo- and hyper-thermia, circulatory shock, acidosis and alkalosis, hypo- and hyper-glycemia, and exercise
- (6) basic electrocardiography and its use in the diagnosis of cardiac arrhythmias
- (7) the multiplicity of factors affecting each and every measurable parameter within the body

**Required & Recommended Books:**

S.A. Fink; Physiology Lecture Outline; BioBooks Pub.; 2011

**To Save Money. I recommend a used copy of:**

G. Tortora & B. Derrickson; Principles of Anatomy & Physiology (12<sup>th</sup> ed);  
John Wiley & Sons; 2009

[hard cover: ISBN-13: 978-0-470-08471-7]

[soft cover: ISBN 978-0-470-27987-8

ISBN-10: 0470084715]

(to save more money, you may purchase even an 11<sup>th</sup> edition)

**OR**

Stuart Ira Fox; Human Physiology (11<sup>th</sup> ed);

McGraw-Hill; 2008 [ISBN-10: 0077265874 OR ISBN-13: 978-0077265878]

**Chapter Summaries & Practice Quizzes & Exams:**

**<http://www.professorfink.com>**

**“TONS” OF RESOURCES:**

**<http://groups.msn.com/anatomyphysiologytests>**

**Practice Quizzes with Answers:**

**<http://www.mhhe.com/biosci/ap/foxhumphys/student/olc/index.htm>**

**[http://occawlonline.pearsoned.com/bookbind/pubbooks/mariebhap/cha  
pter1/deluxe.html](http://occawlonline.pearsoned.com/bookbind/pubbooks/mariebhap/cha<br/>pter1/deluxe.html)**

**[http://en.wikibooks.org/wiki/Human\\_Physiology/Appendix\\_1:\\_answers  
\\_to\\_review\\_questions](http://en.wikibooks.org/wiki/Human_Physiology/Appendix_1:_answers<br/>_to_review_questions)**

**Student Learning Outcomes:**

1. Identify the functional Role of the Autonomic Nervous System (Parasympathetic & Sympathetic).

As assessed by successful completion of a multiple choice or matching examination.

2. Identify the major factors affecting Cardiac Output & Arterial Blood Pressure.

As assessed by successful completion of a multiple choice or matching examination.

3. Correctly define & use the standard units of concentration (dosage), including ratios, % Concentration, Molarity, mEq/L & Osmolarity.

As assessed by Dosage Calculation Problems.

4. Given a clinically article, evaluate and critique the findings based on knowledge of the scientific method, the strength of the evidence, and independent research on the topic.

As assessed by successful completion of a multiple choice or matching examination.

**Lecture Examination Schedule (Tentative):**

LECTURE EXAMINATION 1.....	SEPT 30 (Wed)
Lab Exam on Dosage Calculations.....	OCT 12 (Mon)
LECTURE EXAMINATION 2.....	OCT 21 (Wed)
LECTURE EXAMINATION 3.....	NOV 18 (Wed)
LECTURE FINAL EXAMINATION..... (comprehensive)	DEC 16 (Wed)

**Computation of the Course Grade:**

2 (of the 3) highest Lecture Examinations.....	50% of Course Grade
Exam on Dosage Calculations.....	15% of Course Grade
Final Examination.....	35% of Course Grade

Assuming you take all 3 lecture examinations, the lowest one will be dropped, and the average of the 2 highest will count 50% towards your Course Grade. About 60% of the questions on the Final Exam will come from “older information” and 40% from the information presented after the 3<sup>rd</sup> Exam.

All examinations will consist of both objective-type questions (ie., True/False; Multiple Choice; and Matching questions) that will be answered on **SCAN-TRON (882) forms**, as well as short answer/essay questions. You will be expected to provide SCAN-TRON 882 forms (available at the bookstore) and a **soft lead pencil (no. 1 or no. 2) with a good eraser** for each examination for computer scoring. The Final Examination is comprehensive for the entire semester. **There are no make-up examinations.**

**Grading Policy:**

89 - 100%	A
78 - 88%	B
62 - 77%	C
50 - 61%	D
below 50%	F

**Attendance Policy:**

Regular class attendance and performance of laboratory work will be considered in the determination of the student's Course Grade. Roll will be taken. There is a strong correlation between poor attendance and poor grades.

**You are responsible for information, exam announcements, date changes, etc. presented in class, whether or not you are present**

Students who are given add slips must complete the process by the 3rd class meeting. No replacement add slips will be signed.

**Withdrawal from Class:**

**You are responsible** for your credit and enrollment status. Any student withdrawing from class must inform the admissions office of this decision. **Students failing to follow the correct procedure for withdrawals will receive a grade of "F" for the semester. No withdrawals are permitted after Friday, Nov. 20.** (see Schedule, page 1).

**Cheating/Academic Dishonesty:**

Each student is expected to do his/her own work on all assignments, reports, examinations, etc. **CHEATING ON AN EXAM WILL RESULT IN AN "F" FOR THE COURSE.**

Here is a list of some actions that are considered cheating:

**NO TALKING DURING THE EXAM.**

**KEEP YOUR EYES ON YOUR OWN EXAM.**

**USING NOTES OF ANY KIND (ON CARDS, STRIPS OF PAPER, DESK TOP, ETC.) DURING AN EXAM IS NOT PERMITTED.**

Showing a fellow student your exam, or passing information in any way is not permitted.

Place your answer sheet(s) directly in front of you.

If you have a question, quietly walk up to the instructor and whisper your question.

Translation dictionaries are not permitted.

Changing the answers on a returned Exam & claiming it was scored wrongly.

**All of these demonstrate a lack of Honesty & Integrity which is Essential in all Health Care Professions (& in fact, in all jobs, all relationships, & in all Areas of Life.)**

**Recommendations for Succeeding in Class:**

- 1. Expect to Work. This is not supposed to be easy.**
- 2. Get to class on time, every time, and stay the whole time.**
  - Never miss class unless you're dead, & take good notes.
- 3. Find someone in the class to contact if you miss a meeting.**
- 4. Be organized! Use a daily calendar to set times for regular studying for each of your classes.**
- 5. Study & Review each night the class is given.**
  - Learning is easier if you schedule time daily to read, to think & review.
  - Every time you study. spend at least 10 minutes reviewing previous lessons. (These "refresher shots" are the secret for long-term memory.)
  - Focus your studying on the class Lecture Notes.
  - Read the relevant chapters in your textbook; hi-lite pertinent lines, & add these notes to your class notes (never read without writing).
  - Use the CD-ROM & Web-Sites.
  - Use associations to help you remember things.
  - Prepare note cards and carry them with you to review.
- 6. Increase your studying 1 week before a scheduled Exam!!**
- 7. Anything you turn-in (exams, lab reports) should look neat.**

**TENTATIVE SCHEDULE OF TOPICS**  
(schedule subject to change)

Week	Day	Date	Lecture Topic	Tortora (13 <sup>th</sup> )	Lab/Other
1	M	AUG 31	Introduction  Review of Biological Chemistry	c-1; pp. 1-12  c-2; pp. 29-62	
	W	SEPT 2	Review of Biological Chemistry  Vitamins & Minerals  Review of Cell Biology  Regulation of Blood Sugar Level  Cell Respiration	c-2; pp. 29-62  c-25; pp. 1054-1057  c-3; pp. 63-91  c-18; pp. 707-710 c-25; pp. 1045-1048  chap 25 (pp. 1025-1048)	
2	M	SEPT 7	<b>NO CLASS: LABOR DAY</b>  Review of Biological Chemistry  Vitamins & Minerals  Review of Cell Biology  Regulation of Blood Sugar Level  Cell Respiration	c-2; pp. 29-62  c-25; pp. 1054-1057  c-3; pp. 63-91  c-18; pp. 707-710 c-25; pp. 1045-1048  chap 25 (pp. 1025-1048)	

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	W	SEPT 9	Review of Cell Biology  Regulation of Blood Sugar Level  Cell Respiration  DNA, RNA & Protein Synthesis  Inheritance of Genetic Defects  <u>[FRIDAY SEPT 11: Last Day to Avoid a "W" on Permanent Record]</u>	c-3; pp. 63-91  c-18; pp. 707-710 c-25; pp. 1025-1048  chap 25 (pp. 1025-1048)  c-3; pp. 88-112  c-29; pp. 1210-1216	
3	M	SEPT 14	<u>NO CLASS:</u> ROSH HASHANAH  Review of Cell Biology  DNA, RNA & Protein Synthesis  Transport Across Cell Membranes  Recognition Sites (MHC Proteins)  Receptor Sites  Homeostasis  Fluid Compartments Electrolytes  Thermoregulation	c-3; pp. 63-91  c-3; pp. 88-112  c-3; pp. 68-78  p. 894 & 66  pp. 681-688  c-1; pp. 8-12  c-27; pp. 1110-1121 pp. 1048-1051	



**TENTATIVE SCHEDULE OF TOPICS**  
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Week	Day	Date	Lecture Topic	Tortora (13 <sup>th</sup> )	Lab/Other
	W	SEPT 16	Thermoregulation  Female Reproductive System  Menstrual Cycle  Inflammation  Cytokines  Fever	pp. 1048-1051  c-28; pp. 1143-1149  pp. 1160-1165  c-22; pp. 888-890 pp. 896-897  p. 1058	
4	M	SEPT 21	Inflammation Cytokines  Fever  Organization of the Nervous System  Cerebrospinal Fluid	pp. 888-890 pp. 896-897  p. 1058  c-12 pp. 458-464  c-14; pp. 531-535	Solutions & Tonicity Lab
	W	SEPT 23	<b><u>NO CLASS:</u></b> <b>YOM KIPPUR</b>  Organization of the Nervous System  Membrane Potential  Action Potential  Synaptic Transmission  Neuromuscular Junction	c-12 pp. 458-464  pp. 458-464  pp. 464-472  c-12; pp. 472-491  c-10; pp. 341-345	Solutions And Tonicity Lab

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5	M	SEPT 28	<b><u>NO CLASS:</u></b> <b>SUKKOT</b>  Action Potential  Synaptic Transmission  Neuromuscular Junction  Role of cyclic-AMP  Organization of the Spinal Cord	pp. 464-472  pp. 472-491  pp. 341-345 c-18 pp. 685-688  c-13 pp. 493-500 pp. 512-515	Lipitor Lab Exercise
	W	SEPT 30	<b><u>LECTURE EXAM 1</u></b>  Role of cyclic-AMP  Organization of the Spinal Cord  Cranial Nerves  Sensory Pathways	pp. 685-688 c-18; pp. 493-500 pp. 512-515  c-14; pp. 557-570  chapter 16; pp. 607-619	Lymphatics c-22; pp. 878-880  Plasma Colloid Osmotic Pressure c-21; pp. 812-814
6	M	OCT 5	<b><u>NO CLASS:</u></b> <b>SHEMINI ATZERET</b>  Sensory Pathways  Vision  Hearing  Balance & Equilibrium  Pain & Pain Control	chapter 16 pp. 607-619 c-17; pp. 642-656  pp. 656-665  pp. 665-671  c-16; pp. 611-613	Lymphatics c-22; pp. 878-880  Plasma Colloid Osmotic Pressure c-21; pp. 812-814

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Week	Day	Date	Lecture Topic	Tortora (13 <sup>th</sup> )	Lab/Other
	W	OCT 7	Balance & Equilibrium  Pain & Pain Control  The Control of Posture & Movement	pp. 665-671  pp. 611-613  c-13; pp. 514-521 c-16; pp. 620-626	
7	M	OCT 12	The Control of Posture & Movement  Neural Influence on Visceral Organs (ANS)  The Stress Response	pp. 514-521 pp. 620-626  chapter 15; pp. 582-605  c-18; pp. 713-715	<b><u>LAB EXAM 1</u></b>
	W	OCT 14	Neural Influence on Visceral Organs (ANS)  The Stress Response  Functional Areas of the Brain	chapter 15 pp. 582-605  pp. 713-715  c-14; pp. 536-556 pp. 625-634	
8	M	OCT 19	Neural Influence on Visceral Organs (ANS)  The Stress Response  Functional Areas of the Brain	chapter 15 pp. 582-605  pp. 713-715  c-14; pp. 536-556 pp. 625-634	

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Week	Day	Date	Lecture Topic	Tortora (13 <sup>th</sup> )	Lab/Other
	W	OCT 21	<p><b><u>LECTURE EXAM 2</u></b></p> <p>Endocrine System</p> <p>Role of ADH</p> <p>Role of Oxytocin</p> <p>FSH &amp; LH in Males</p> <p>FSH &amp; LH in Females</p> <p>Renin-Angiotensin-Aldosterone Reflex</p>	<p>c-18; pp. 681-727</p> <p>p. 695 &amp; 1087</p> <p>pp. 1209-1210 p. 694 c-28; pp. 1136-1138</p> <p>pp. 1160-1167</p> <p>c-26; p. 1087 c-18; pp. 704-706</p>	
9	M	OCT 26	<p>Endocrine System</p> <p>Role of ADH</p> <p>Role of Oxytocin</p> <p>FSH &amp; LH in Males</p> <p>FSH &amp; LH in Females</p> <p>Renin-Angiotensin-Aldosterone Reflex</p> <p>Organization of the Cardiovascular System</p>	<p>pp. 681-727</p> <p>p. 695 &amp; 1087</p> <p>pp. 1209-1210 p. 694 c-28; pp. 1136-1138</p> <p>pp. 1160-1167</p> <p>c-26; p. 1087 c-18; pp. 704-706</p> <p>c-20; p. 769 c-21; pp. 824-827</p>	

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<b>Week</b>	<b>Day</b>	<b>Date</b>	<b>Lecture Topic</b>	<b>Tortora (13<sup>th</sup>)</b>	<b>Lab/Other</b>
	<b>W</b>	<b>OCT 28</b>	<b>Endocrine System</b>  <b>Role of ADH</b>  <b>Role of Oxytocin</b>  <b>FSH &amp; LH in Males</b>  <b>FSH &amp; LH in Females</b>  <b>Renin-Angiotensin- Aldosterone Reflex</b>  <b>Organization of the Cardiovascular System</b>	<b>pp. 681-727</b>  <b>p. 695 &amp; 1087</b>  <b>pp. 1209- 1210</b> <b>p. 694</b> <b>c-28;</b> <b>pp. 1136- 1138</b>  <b>pp. 1160- 1167</b>  <b>c-26; p. 1087</b> <b>c-18;</b> <b>pp. 704-706</b>  <b>c-20; p. 769</b> <b>c-21;</b> <b>pp. 824-827</b>	
<b>10</b>	<b>M</b>	<b>NOV 2</b>	<b>Organization of the Circulatory System</b>  <b>Lymphatic System</b>  <b>Cardiac Physiology</b>		

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Week	Day	Date	Lecture Topic	Tortora (13 <sup>th</sup> )	Lab/Other
	W	NOV 4	<b>Organization of the Circulatory System</b>  <b>Lymphatic System</b>  <b>Cardiac Physiology</b>	p. 769 pp. 824-827 pp. 862-863  c-22; pp. 876-885  c-20; pp. 761-801	ECG LAB
11	M	NOV 9	<b>Cardiac Physiology</b>	c-20; pp. 761-801	ECG LAB
	W	NOV 11	<b><u>NO CLASS:</u></b> <b>VETERANS DAY</b>  <b>Cardiac Physiology</b>	c-20; pp. 761-801	ECG LAB
12	M	NOV 16	<b>Cardiac Physiology</b>  <b>Cardiovascular Physiology</b>  <b>Hypertension</b>	c-20; pp. 761-801  c-21; pp. 803-826  pp. 868-874	

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Week	Day	Date	Lecture Topic	Tortora (13 <sup>th</sup> )	Lab/Other
	W	NOV 18	<b><u>LECTURE EXAM 3</u></b>  <b><u>[LAST DAY TO DROP: FRIDAY NOV 21]</u></b>		<b>BLOOD LAB</b>
<b>13</b>	<b>M</b>	<b>NOV 23</b>	<b>Cardiovascular Physiology</b>  <b>Hypertension</b>  <b>Hematology</b>	<b>c-21; pp. 803-826</b>  <b>pp. 868-874</b>  <b>chapter 19; pp. 729-756; Appendix C-4</b>	
	<b>W</b>	<b>NOV 25</b>	<b>Cardiovascular Physiology</b>  <b>Hypertension</b>  <b>Hematology</b>   <b>LDL &amp; HDL</b>   <b>T- &amp; B- Lymphocytes</b>	<b>c-21; pp. 803-826</b>  <b>pp. 868-874</b>  <b>chapter 19; pp. 729-756; Appendix C-4</b>  <b>c-20; pp. 791-793 c-25; pp. 1037- 1040</b>  <b>c-22; pp. 890-901</b>	

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<b>Week</b>	<b>Day</b>	<b>Date</b>	<b>Lecture Topic</b>	<b>Tortora (13<sup>th</sup>)</b>	<b>Lab/Other</b>
<b>14</b>	<b>M</b>	<b>NOV 30</b>	<b>Hematology</b>  <b>LDL &amp; HDL</b>  <b>T- &amp; B- Lymphocytes</b>  <b>Pulmonary Ventilation</b>  <b>Arterial Blood Gases</b>	<b>chapter 19;</b> <b>pp. 690-716;</b> <b>Appendix C-4</b> <b>c-20;</b> <b>pp. 791-793</b> <b>c-25;</b> <b>pp. 1037-</b> <b>1040</b>  <b>c-22;</b> <b>pp. 890-901</b>  <b>c-23</b> <b>pp. 936-942</b>  <b>pp. 943-951</b>	
	<b>W</b>	<b>DEC 2</b>	<b>Hematology</b>  <b>LDL &amp; HDL</b>  <b>T- &amp; B- Lymphocytes</b>  <b>Pulmonary Ventilation</b>  <b>Arterial Blood Gases</b>	<b>chapter 19;</b> <b>pp. 690-716;</b> <b>Appendix C-4</b> <b>c-20;</b> <b>pp. 791-793</b> <b>c-25;</b> <b>pp. 1037-</b> <b>1040</b>  <b>c-22;</b> <b>pp. 890-901</b>  <b>c-23</b> <b>pp. 936-942</b>  <b>pp. 943-951</b>	



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Week	Day	Date	Lecture Topic	Tortora (13 <sup>th</sup> )	Lab/Other
15	M	DEC 7	Pulmonary Ventilation  Arterial Blood Gases  Regulation of Ventilation  Acidosis & Alkalosis	c-23 pp. 936-942  pp. 943-951  pp. 951-966  c-27; pp.1118-1128	
	W	DEC 9	Pulmonary Ventilation  Arterial Blood Gases  Regulation of Ventilation  Acidosis & Alkalosis	c-23 pp. 936-942  pp. 943-951  pp. 951-966  c-27; pp.1118-1128	
16	M	DEC 14	<b><u>NO CLASS:</u></b>		
	W	DEC 16	<b><u>FINAL EXAM</u></b>		