University of Oregon
Department of Biology

Course: Introduction to Human Physiology, BI 121, 04 cr (CRN 41354) MTWRFSU (00 WEB) + strongly encouraged, but optional *Zoom* Lecture Discussions MTWR (10:00 – 11:50 am, US Pacific Daylight Time/PDT) and strongly encouraged, but optional *Zoom* Lab Discussions TR (1:00 – 1:50 pm, US PDT), Summer, 2020.

Website: *https://canvas.uoregon.edu/courses/151684*

Lecturer & Lab Instructor; Office; Hours; Phone; E-Mail: V. Pat Lombardi; WEB; *Zoom* appointments by e-mail; 541-346-6055 (office/message); *lombardi@uoregon.edu*

Required Texts: Sherwood, Lauralee (LS). *Fundamentals of Human Physiology, 4th ed.* Belmont, CA: Brooks/Cole, Cengage Learning, 2012, ISBN-13:0840062253. Digital rental or purchase, used or new textbook.

OR

Chiras, Daniel D. (DC). *Human Body Systems: Structure, Function and Environment, 2nd ed.* Burlington, MA: Jones and Bartlett Learning, 2013. Digital rental or purchase, used or new textbook.

+

Lombardi VP, Evonuk E & Carmack MA (LM). *BI 121, Introduction to Human Physiology, Laboratory Manual, Summer 2020*. Supplied free as Lab Worksheets & Lab Backgrounds on Canvas.

1^0 Supplemental Text: Readings listed in [ ] below:

Sizer, Frances S. & Whitney, Eleanor N. (S&W). *Nutrition: Concepts & Controversies, 15th, 14th, 13th or 12th ed.* Boston, MA: Cengage Learning, 2020, 2017, 2013 or 2010 or other peer-reviewed nutrition textbook. See also:

https://nutritionfacts.org/, *https://www.cspinet.org/eating-healthy*, *https://www.hsph.harvard.edu/nutritionsource/*, *https://www.berkeleywellness.com/healthy-eating/nutrition*, *https://www.nutrition.gov/*, *https://www.eatright.org*, *https://www.heart.org/en/healthy-living/healthy-eating/eat-smart/nutrition-basics*, *https://www.aicr.org/cancer-prevention/*, *https://mynutrition.wsu.edu/nutrition-basics*, *https://www.nhlbi.nih.gov/health/educational/wecan/tools-resources/nutrition.htm*, *https://health.gov/our-work/food-nutrition*, *https://www.nutritionletter.tufts.edu/*

+See many supplemental reserved texts/resources in Science Library or web listing: *http://libweb.uoregon.edu/* Click on the ***Course Reserves*** tab, then sign in with U of O ID and password & type in *BI 121*.

Tentative Outline:

Jul 20 (M) **Lecture 1. Anatomy, Physiology & Homeostasis I.** I. Introduction (outline, text, grading, expectations…); Compare & Contrast Human Anatomy & Human Physiology; Body Levels of Organization. II. Homeostasis I. **Readings:** *ch 1 vignette p 0, ch 1 pp 1-10* (LS); *Introduction, Study Skills, pp iii-viii; Module 1, pp 1-8* (DC). **Activity**: **Active Learning Questions Lecture 1.** Submit on Canvas by 11:59:59 pm, US PST.

Jul 21 (T) **Lecture 2. Homeostasis II, Cell Physiology.** I. Homeostasis II: – Negative *vs* + Positive Feedback; Simplified Homeostatic Model Balance Examples: Temperature & Blood Pressure. II. Cell Anatomy, Physiology & Compartmentalization: Size; Basic Survival Skills; Organelles. **Readings:** *ch 1, pp 11-17; ch 2, pp 18-27* (LS). **Activity: Active Learning Questions Lecture 2.** Submit on Canvas by 11:59:59 pm, US PST.

Jul 21 (T) **Lab 1. Introduction to Anatomy & Physiology. Readings:** *pp 1-1 to 1-10* (LM). **Activity: Lab 1 Worksheet.** Submit on Canvas by 11:59:59 pm, US PST.

Jul 22 (W) **Lecture 3. Anaerobic *vs* Aerobic Metabolism.** I. Metabolism: Anaerobic (ATP-PC, Glycolytic) vs Aerobic; Subcategory Location & ATP Production. II. Cytoskeleton. **Readings:** *ch 2, pp 26-41* (LS). **Activity: Active Learning Questions Lecture 3.** Submit on Canvas by 11:59:59 pm, US PST.

Jul 23 (R) **Lecture 4. Genetics: DNA, RNA & Proteins. Readings:** *Appendix B, pp A-16, A-17*; *Appendix C*, *pp A-18 to A-26* (LS). **Activity: Active Learning Questions Lecture 4.** Submit on Canvas by 11:59:59 pm, US PST.

Jul 23 (R) **Lab 2. Histology: Microscopic Study of Tissues. Readings:** *pp i-iii, 1-1 to 1-4* (LM). **Activity: Lab 2 Worksheet.** Submit on Canvas by 11:59:59 pm, US PST.

Jul 24 (F) **Quiz 1 on Canvas.** Covers Lectures 1 – 4 and Labs 1 & 2. Open 12 n until 11:59:59 pm, US PDT.

Jul 27 (M) **Lecture 5. Nutrition & Disease Prevention.** I. Nutrition in the News. II. Standard Serving Sizes: Estimating for Dietary Analyses. III. Nutrients Essential for Life: Water, Energy Nutrients (1^0 Carbohydrates, 2^0 Fats, 3^0 Proteins), Vitamins & Minerals. IV. Blue Zones & Diets of the World's Longest-lived People. V. What about Paleo & Red Meat? VI. Exercise, Dieting or Both? VII. Nutrition Quackery. **Readings:** *ch 16 pp 485-6* (LS); *Module 2, pp 9-16* (DC); [*Highlights of ch 1, 2*, *pp 1-69*; *ch 9, pp 334-80 (S&W)*]; *See links on Outline p 1 under 1^0 Supplemental Text.* **Activity: Active Learning Questions Lecture 5.** Submit on Canvas by 11:59:59 pm, US PST.

Jul 28 (T) **Lecture 6. Gastrointestinal System.** I. Hydrolysis, the Central Theme of Digestion. II. Gut Anatomy, Histology & General Secretions. III. Enzymatic Digestion, Absorption & Defecation. **Readings:** *ch 15, pp 436-445*; *focus on Table 15-1 pp 440-441* (LS). *Module 3, pp 17-23* (DC); [*ch 15, pp 445-459, 463-477* (LS)]. **Active Learning Questions Lecture 6.** Submit on Canvas by 11:59:59 pm, US PST.

Jul 28 (T) **Lab 3. Nutrition Analyses.** Record your diet for at least one day on p 3-7 and analyze it using the *Diet Controller//Diet Organizer or ASA 24 National Cancer Institute Calorie Counter & Food Diary/Cronometer Nutrition Tracker, HealthyOut, My Fitness Pal or Other Smart Phone Software.* **Readings:** *pp 3-1 to 3-20* (LM). **Activity: Lab 3 Worksheet.** Submit on Canvas by 11:59:59 pm, US PST, by Saturday, Aug 1st, 2020.

Jul 29 (W) **Lecture 7. Cardiovascular System.** I. Circulatory: Cardiovascular & Lymphatic. II. Cardiac Physiology: Anatomy, Adult Heart & Fetal Blood Flow. **Readings:** *ch 9, pp 228-234; ch 10, pp 281-7* (LS); *Module 4, pp 25-29; 33-34* (DC). **Active Learning Questions Lecture 7.** Submit on Canvas by 11:59:59 pm, US PST.

Jul 30 (R) **Lecture 8. Atherosclerosis & Cardiovascular Diseases.** I. Atherosclerosis. II. Cardiovascular Diseases (CVDs): What's a Heart Attack (AMI)? Stroke (CVA)? Peripheral Vascular Disease (PVD)? Hypertension (HTN)? III. CVDs Risk Reduction: What Can I Do to Lower My Risk? IV. Heart Rate & Blood Pressure? **Readings:** *ch 9, pp 252-259; ch 10, pp 266-270, 287-295* (LS); *Module 4, pp 29-33* (DC). **Active Learning Questions Lecture 8.** Submit on Canvas by 11:59:59 pm, US PST.

Jul 30 (R) **Lab 4. Heart Rate, Blood Pressure & Cardiovascular Disease Risk. Readings:** *pp 4-1 to 4-8* (LM). **Activity: Lab 4 Worksheet.** Submit on Canvas by 11:59:59 pm, US PST.

Jul 31 (F) **Quiz 2 on Canvas**. Covers Lectures 5 – 8 and Labs 3 & 4. Open 12 n until 11:59:59 pm, US PDT.

Aug 3 (M) **Lecture 9. Blood.** I. Introduction to Blood Composition: Cells *vs* Liquid; Red Blood Cells, White Blood Cells, Platelets *vs* Plasma; Plasma *vs* Serum. II. White Blood Cell Differentiation & Function. **Readings:** *ch 11, pp 296-304* (LS). *Module 5, pp 35-9; highlights of Module 6, pp 41-9* (DC); *pp 5-1 thru 5-6* (LM). **Active Learning Questions Lecture 9.** Submit on Canvas by 11:59:59 pm, US PST.

Aug 4 (T) **Lecture 10. Blood Testing.** I. Blood Chemistry Review. II. Hematocrit & Blood Typing. III. Blood Glucose. IV. Diabetes Mellitus: Type I *vs* Type II; How Exercise & Diet Impact. **Readings**: *ch 17, pp 525-536* (LS); *Module 13, pp 110-12* (DC). **Active Learning Questions Lecture 10.** Submit on Canvas by 11:59:59 pm, US PST.

Aug 4 (T) **Lab 5. Blood Chemistry: Blood Glucose & Blood Typing. Readings:** *pp 5-1 to 5-6* (LM). **Activity: Lab 5 Worksheet.** Submit on Canvas by 11:59:59 pm, US PST.

Aug 5 (W) **Lecture 11. Endocrine System.** I. Introduction to the Endocrine System: What's an Endocrine? Classifying Hormones. IV. Hypothalamus, Pituitary & Target Organs. **Readings:** *ch 4, pp 94-105*; *ch 17, pp 494-525* (LS); *Module 13, pp 103-113* (DC). **Active Learning Questions Lecture 11.** Submit on Canvas by 11:59:59 pm, US PST.

Aug 6 (R) **Lecture 12. Nervous System.** I. Nervous System & Neurons (Nerve Cells); Central (Brain & Spinal Cord) vs. Peripheral Nervous System (Afferent & Efferent Divisions); II. The Autonomic Nervous System; Fight or Flight. III. Action Potentials, Synapses & the Neuromuscular Junction. **Readings:** *ch 5, pp 106-120*; *ch 7, pp 178-193*; *highlights of ch 4, pp 70-88* (LS); *Module 9, pp 67-77* (DC). **Active Learning Questions Lecture 12.** Submit on Canvas by 11:59:59 pm, US PST.

Aug 6 (R) No Lab! Take a break to study for Quiz 3! Best of luck! :)

Aug 7 (F) **Quiz 3 on Canvas**. Covers Lectures 9 – 12 and Lab 5. Open 12 n until 11:59:59 pm, US PDT.

Aug 10 (M) **Lecture 13. Skeletal Muscle Structure & Function.** I. Major Muscle Types; Structure of Skeletal Muscle. II. Molecular Basis of Skeletal Muscle Contraction. III. Metabolism & Fiber Types, Skeletal Muscle Adaptations. **Readings:** *ch 8, pp 194-204, 210-14* (LS); *Module 12, pp 97-102* (DC). **Active Learning Questions Lecture 13.** Submit on Canvas by 11:59:59 pm, US PST.

Aug 11 (T) **Lecture 14. Respiratory System.** I. Respiratory System: Structure & Histology. II. Gas Volumes & Capacities, III. Ventilation Mechanics & Control. IV. Gas Exchange & Transport. **Readings:** *ch 12, highlights of pp 344-379* (LS); *Module 7, pp 51-57* (DC). **Active Learning Questions Lecture 14.** Submit on Canvas by 11:59:59 pm, US PST.

Aug 11 (T) **Lab 6**: Pulmonary Function Tests. **Readings:** *pp 6-1 to 6-8* (LM) (WEB).

Aug 12 (W) **Lecture 15. Cigarette Smoking & Vaping. Readings & Videos:** *https://www.lung.org/quit-smoking/smoking-facts/health-effects*, *https://www.cancer.org/cancer/cancer-causes/tobacco-and-cancer.html*, *https://smokefree.gov/quit-smoking/why-you-should-quit/health-effects*, *https://www.cardiosmart.org/Healthy-Living/Stop-Smoking/Smoking-and-Heart-Disease*, *https://www.pbs.org/video/vaping-1576094392/*; *ch 11, p 340* (LS); *Module 7, p 57* (DC). **Active Learning Questions Lecture 15.** Submit on Canvas by 11:59:59 pm, US PST.

Aug 13 (R) **Quiz 4 on Canvas**. Covers Lectures 13 – 15 and Lab 6. Open 12 n until 11:59:59 pm, US PDT.

Grading: 10% Lecture Attendance & Active Learning Questions submitted on Canvas
10% Lab Attendance & Worksheets submitted on Canvas
80% 4 Weekly Quizzes on Canvas each worth 20%

☺ ...We ♥ Human Physiology!!!