

University of Oregon
Department of Biology

Course: BI 358 Investigations in Medical Physiology, CRN 21782, 04 cr, Lecture: 8:30-9:50 TR 110 Willamette (WIL) + Discussion: CRN 21783 10:00-11:50 T or CRN 21784 12:00-13:50 T or CRN 21785 14:00-15:50 T, 129 Huestis (HUE), Winter 2019. Website: <http://blogs.uoregon.edu/bi358/winter-2019/>

Instructor: V. Pat Lombardi, 65A KLA, 541-346-6055, lombardi@uoregon.edu
Office Hr: M, 11:00 – 12:00, R 10:00 – 11:00 and by appointment.

Discussion Coordinators, Office Hr: Nelson Ugobor, TBA, nugobor@uoregon.edu
Courtney Zesbough, TBA, czesbau3@uoregon.edu

Texts: JE Hall (G&H). *Guyton & Hall Textbook of Medical Physiology*, 13th ed. Elsevier, 2016. [Required]

BI 358, Investigations in Medical Physiology Discussion-Lecture Notebook (DLN), 2019. [Required]

Guyton AC & JE Hall. *Pocket Companion to Textbook of Medical Physiology*, 13th ed. Elsevier Saunders, 2016. [Optional]

Sherwood L (LS1). *Human Physiology: From Cells to Systems*, 9th/8th/7th/6th ed. Cengage Learning, 2016, 2013, 2010, 2007. [On 2 hr Reserve in Price Science Commons & Research Library.]

Sherwood L (LS2). *Fundamentals of Physiology: A Human Perspective*, 4th/3rd ed. Brooks/Cole, Cengage Learning, 2012, 2006. [On 2 hr Reserve in Price Science Commons & Research Library.]

See Course Reserve List <http://libweb.uoregon.edu/course-reserves> for additional excellent references.
NB: To the left of *Search Course Reserves*, type in *Lombardi*, then login with your *uoregon* ID and password.

Tentative Outline:

- Jan 8 (T) **Lecture 1:** Introduction, Arthur C. Guyton, Medical Physiology, Eugene Evonuk, Homeostatic Balances (Water, Temperature, pH, Ionic, Gas, Metabolic), Simplified Homeostatic Model. Nervous System Organization: Central vs. Peripheral. Nervous System = Computer? **Readings:** G&H Preface pp vii-viii, ch 1 pp 3-10, ch 46 pp 577-82; LS1/LS2 ch 1 (Homeostasis) + LS1/LS2 ch 5 (Organization & Cells of the Nervous System section); DLN pp A-1, A-2 (110 WIL).
- Jan 8 (T) **Discussion 1:** I. Introduction & Resources: Personal Information Cards. II. Guidelines for Research Paper & Presentation. **Discussion 2:** Addiction Medicine Primer: I. Discussion: *Cannibis in the Clinic* + *PBS America Addicted*. II. Mini-group Presentations on Common Drugs of Addiction: Alcohol, Cocaine, Heroin, Marijuana, Methamphetamine, Nicotine. **Readings:** DLN pp iv-x, 1-1, 1-2, 2-1 thru 2-66. **Additional Assignment:** *Resources & Computer Search:* Begin personal search outside of lab in Price Science Commons & Research Library on topic of interest to create paper outline due Jan 15 (T) (129 HUE +).
- Jan 10 (R) **Lecture 2:** Autonomic Nervous System: Sympathetic vs. Parasympathetic: Neurotransmitters, Receptors, Actions; Fight-or-Flight. Limbic System & Hypothalamus, Synapses & Introduction to Addiction Medicine. **Readings:** G&H ch 46 pp 582-7; ch 59 pp 751-61; ch 61 pp 773-85 (110 WIL).
- Jan 15 (T) **Lecture 3: Guest Lecture Series-Clinical:** Douglas Bovee, MD, Addiction & Internal Medicine, Eugene, OR. *Drugs of Addiction: A Survey of their Pharmacology & Pathophysiology*. **Readings:** DLN pp B-1 thru B-11 + <http://learn.genetics.utah.edu/content/addiction/mouse/>
- Jan 15 (T) **Discussion 3: Quiz 1**-covers Lectures 1, 2 & 3 & Discussion 2. Peer Review of Outlines. **4 copies of brief outline due + prior to Discussion, e-mail copy of outline to lombardi@uoregon.edu.** Brief topic explanations within small groups. Peer review of outlines + feedback by e-mail to peers. **Readings:** DLN pp 3-1, 3-2.
- Jan 17 (R) **Lecture 4:** Gastrointestinal Anatomy & Physiology. **Readings:** G&H ch 63, 64 & 65, pp 797-832.
- Jan 22 (T) **Lecture 5:** I. Digestion & Absorption. II. Nutrition & Disease Prevention. **Readings:** G&H ch 66 pp 833-42; + highlights of ch 72 pp 887-902; DLN pp C-1 thru C-16.

- Jan 22 (T) **Discussion 4: NB: Prior to lab, please record your diet for at least two full days** so that you have personal data to conduct computer nutritional analyses. **Readings:** DLN pp 4-1 thru 4-22.
- Jan 24 (R) **Lecture 6:** Blood + Immunology I: Blood Cells & Immunity, Overview of Innate vs. Acquired/Adaptive (Nonspecific vs. Specific) Immunity. **Readings:** G&H ch 33 & 34 pp 445-64; ch 36 pp 477-82.
- Jan 29 (T) **Lecture 7:** Immunology II: Resistance of the Body to Infection; Immunity & Allergy + Evolution of the Immune System. How Breast Milk Protects Newborns. **Readings:** G&H ch 35 pp 465-76 + e-mailed article links.
- Jan 29 (T) **Discussion 5: Quiz 2**-covers **Lectures 4, 5 & Discussion 4**. I. Evolution, Immunity & the Invertebrates. Sharks & Origins of Vertebrate Immunity. Allergies? II. White Blood Cell Differential Count Lab. **Readings:** DLN pp 5-1, 5-2 + e-mailed article links.
- Jan 31 (R) **Lecture 8:** Cardiovascular Physiology: Heart & Vessels Anatomy & Physiology, General Circulation, Coronary Circulation, Atherosclerosis, CABG & PTCA, Hypertension. **Readings:** G&H ch 9 pp 109-22; ch 14 pp 169-72; ch 15 pp 182-8; ch 16 pp 198-201; ch 21 pp 262-70; ch 69 pp 871-4 (Cholesterol).
- Feb 5 (T) **Lecture 9: Guest Lecture Series-Clinical:** Kraig W. Jacobson, MD, Allergy & Asthma Associates, Eugene, OR. *Allergy & Immunology*. **Readings:** DLN pp D-1 thru D-14.
- Feb 5 (T) **Discussion 6:** I. Peer Review of Papers. **4 hard copies of Paper Draft due & e-mail copy to Group Members + prior to Discussion, e-mail copy of Paper Draft to either czesbau3@uoregon.edu or nugobor@uoregon.edu** based on Discussion section. Small Group Discussions with project overviews + detailed feedback on papers by way of follow-up e-mails to each group member. II. Heart Dissection Lab. **Readings:** DLN p 6-1 and 6-2.
- Feb 7 (R) **Lecture 10:** I. Introduction to Endocrinology, Pituitary Hormones & Control by the Hypothalamus. II. Peripheral Endocrine Organs. **Readings:** G&H ch 75 & 76 pp 925-50; ch 77 & 78 highlights pp 951-82.
- Feb 12 (T) **Lecture 11: Guest Lecture Series-Clinical:** Richard C. Padgett, MD, Cardiology, Oregon Heart & Vascular Institute, Eugene, OR. *Clinical Cardiology, Case Studies & Recent Advances*. DLN pp E-1 thru E-12.
- Feb 12 (T) **Discussion 7: Quiz 3** - Covers **Lectures 6, 7 & 9 & Discussion 5** (Immunology). Feedback on Papers (continued). **Additional Assignment:** Case histories to prepare for Dr. Garrett. **Readings:** DLN pp 7-1 thru 7-3.
- Feb 14 (R) **Lecture 12:** Reproductive Physiology: I. Female Reproductive Anatomy & Physiology: Ovarian & Menstrual Cycle, Birth Control Techniques. II. Male Reproductive Anatomy & Physiology. **Readings:** G&H ch 82 pp 1037-54; ch 83 pp 1064-9; ch 3 pp 41-3; ch 81 pp 1021-35.
- Feb 19 (T) **Lecture 13: Quiz 4** – Covers **Lectures 8 & 11 & Discussion 6** (Cardiovascular Physiology) (110 WIL + ?). Break. Fetal & Neonatal Physiology, Fetal Blood Flow, Pediatrics, Children, Development & Sports Medicine. **Readings:** G&H ch 84 pp 1071-81; ch 23 pp 288-91; ch 80 pp 1005-9.
- Feb 19 (T) **Discussion 8: Class Presentations I.**
- Feb 21 (R) **Lecture 14: Guest Lecture Series-Clinical:** Audrey P. Garrett, MD, MPH, Willamette Valley Cancer Institute & Research Center, Eugene, OR & Oregon Health & Science University, Portland, OR. *HPV & Gynecologic Care of Women with Breast Cancer*. **Readings:** DLN pp F-1 thru F-14.
- Feb 26 (T) **Lecture 15: Guest Lecture Series-Clinical:** Paul F. Kaplan, MD, Oregon Health & Science University, Portland, OR & University Health Center & Department of Human Physiology, Eugene, OR. *Polycystic Ovarian Syndrome & Assisted Reproductive Technologies*. **Readings:** DLN pp G-1 thru G-7.
- Feb 26 (T) **Discussion 9: Class Presentations II.**

- Feb 28 (R) **Lecture 16: Quiz 5 – NB:** Start time 8:00 am. Covers **Lectures 10, 12, 14 & 15 & Discussion 7 Case Histories** (Endocrinology, Reproduction & Cancer) (110 WIL + ?). **Guest Lecture Series - Clinical:** Jenna M. Godfrey, MD, MSPH, Slocum Center for Orthopedics & Sports Medicine, Eugene, OR. *Orthopedics, Sports Medicine & Clinical Case Studies in Pediatrics*. **Readings:** DLN p H-1 + links.
- Mar 5 (T) **Lecture 17: Guest Lecture Series-Clinical:** Pilar Bradshaw, MD, Eugene Pediatric Associates, Eugene, OR. *Pediatrics: Introduction & Cases*. **Readings:** DLN pp H-3 thru H-8.
- Mar 5 (T) **Discussion 10: Class Presentations III.**
- Mar 7 (R) **Lecture 18:** Eye I: Anatomy & Optics of Vision. II: Retinal Receptor & Neural Function. III: Central Neurophysiology of Vision. **Readings:** G&H ch 50, 51 pp 635-60; ch 52 pp 661-4.
- Mar 12 (T) **Lecture 19: Guest Lecture Series-Clinical:** Annette Chang Sims, MD, Oregon Eye Specialists, Drs. Fine, Hoffman & Sims, Ophthalmologists, Eugene, OR. *Ophthalmology: The Medical & Surgical Treatment of Eye Diseases*. **Readings:** I-1 thru I-6.
- Mar 12 (T) **Discussion 11: Vision Lab with Eye Dissections. Readings:** DLN pp 11-1 thru 11-3.
- Mar 14 (R) **Lecture 20: Quiz 6** -covers **Lectures 13, 16, 17, 18, 19** (110 WIL+ ?). Break. Thoughts on applying to graduate schools in medicine & allied health. Final comments by Pat.
- Mar 19 (T) **Final Research Paper Due** no later than 5:00 pm in Pat Lombardi's box in Main Biology Office (77 KLA).

Grading:

- Attendance & Participation, Feedback on Guest Lecturers (20%)
- Quizzes (40%)
- Class Presentation (20%)
- Research Paper (20%)