

University of Oregon
Department of Biology

Course: BI 358 Investigations in Medical Physiology, CRN 22313, 04 cr, Lecture: 8:30-9:50 TR 110 Willamette (WIL) + Discussion: CRN 22314 10:00-11:50 T or CRN 22315 12:00-13:50 T or CRN 22316 14:00-15:50 T, 112 HUE (HUE), Winter 2014. Website: <http://blogs.uoregon.edu/bi358/winter-2014/>

Instructor: V. Pat Lombardi, 73A KLA, 541-346-4536, lombardi@uoregon.edu

Office Hr: M, 11:00 -12:00 and by appointment.

Discussion Coordinators: Conor O'Sullivan, TBA, TBA, conoro@uoregon.edu
Sam Rutherford, TBA, TBA, srutherf@uoregon.edu

Office Hr: TBA

Texts: Guyton AC & JE Hall (G&H). *Textbook of Medical Physiology*, 12th ed. Elsevier Saunders, 2011. [Required]

BI 358, Investigations in Medical Physiology Discussion/Lecture Notebook (DLN), 2014. [Required]

Guyton AC & JE Hall. *Pocket Companion to Textbook of Medical Physiology*, 12th ed. Elsevier Saunders, 2012. [Optional]

Sherwood L (LS1). *Human Physiology: From Cells to Systems*, 7th/6th/5th ed. Brooks/Cole, Thomson Learning, 2010, 2007, 2004. [On 2 hr Reserve in Science Library.]

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

See Course Reserve List <http://libweb.uoregon.edu/> for additional excellent references. NB: Beneath *Library Materials* to the lower left, click on the green tab *Course Reserves*, then type in Lombardi as *Instructor*.

Tentative Outline:

- Jan 7 (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 3-9, ch 45 pp 543-6; LS1/LS2 ch 1 (Homeostasis) + LS1/LS2 ch 5 (Organization of Nervous System section); DLN pp A-1, A-2 (110 WIL).
- Jan 7 (T) **Discussions 1 & 2:** Introduction & Resources: Personal Information Cards; Guidelines for Research Paper & Presentation; Addiction Medicine Primer: Discussion + 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 2-60. **Additional Assignment:** *Resources & Computer Search, Focus on Topics of Personal Interest* to create paper outline due Jan 14 (T) (112 HUE + begin personal search outside of lab).
- Jan 9 (R) **Lecture 2:** Autonomic Nervous System: Sympathetic vs. Parasympathetic: Neurotransmitters, Receptors, Actions; Fight-or-Flight. Synapses & Introduction to Addiction Medicine. **Readings:** G&H ch 45 pp 546-52; ch 58 pp 711-20; ch 60 pp 729-41 (110 WIL).
- Jan 14 (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-7 + <http://learn.genetics.utah.edu/content/addiction/drugs/mouse.html>.
- Jan 14 (T) **Discussion 3: Quiz 1**-covers **Lectures 1, 2 & 3**. 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 16 (R) **Lecture 4:** Gastrointestinal Anatomy & Physiology. **Readings:** G&H ch 62, 63 & 64, pp 753-88.
- Jan 21 (T) **Lecture 5:** I. Digestion & Absorption. II. Nutrition & Disease Prevention. **Readings:** G&H ch 65 pp 789-805; ch 71 pp 843-57.

- Jan 21 (T) **Discussion 4: NB: Prior to this Discussion, please complete p 4-8** by recording at least one full day of your diet so that you have personal data to conduct the computer nutritional analyses. **Readings:** DLN pp 4-1 thru 4-20.
- Jan 23 (R) **Lecture 6:** Blood + Immunology I: Blood Cells & Immunity, Overview of Innate vs. Acquired/Adaptive (Nonspecific vs. Specific) Immunity. **Readings:** G&H ch 32 & 33 pp 413-32; ch 35 pp 445-50.
- Jan 28 (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 34 pp 433-44; + e-mailed article links.
- Jan 28 (T) **Discussion 5: Quiz 2**-covers **Lectures 4 & 5.** Immunity & Evolution: Evolution, Immunity & the Invertebrates. Sharks & Origins of Vertebrate Immunity. Allergies? **Readings:** DLN p 5-1 + e-mailed article links.
- Jan 30 (R) **Lecture 8:** Cardiovascular Physiology: Heart & Vessels Anatomy & Physiology, General Circulation, Coronary Circulation, Atherosclerosis, CABG & PTCA, Hypertension. **Readings:** G&H ch 9 pp 101-13; ch 14 pp 157-60; ch 15 pp 170-6; ch 16 pp 186-9; ch 19 pp 217-22; ch 21 pp 246-53; ch 68 pp 819-30.
- Feb 4 (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-15.
- Feb 4 (T) **Discussion 6: Quiz 3** -covers **Lectures 6, 7 & 9.** Peer Review of Papers. **4 Copies of Paper Draft Due to Group Members + prior to Discussion, e-mail copy of Paper Draft to either conoro@uoregon.edu or srutherford@uoregon.edu** based on Discussion section. Small Group Discussions + Feedback on papers by way of follow-up e-mails to group members. **Reading:** DLN p 6-1.
- Feb 6 (R) **Lecture 10:** I. Cardiovascular Physiology (continued). II. Introduction to Endocrinology, Pituitary Hormones & Control by the Hypothalamus. **Readings:** G&H ch 74 & 75 pp 881-906.
- Feb 11 (T) **Lecture 11:** Insulin, Glucagon & Diabetes Mellitus; Thyroid Metabolic Hormones; Adrenocortical Hormones. **Readings:** G&H ch 78 pp 939-54; ch 76 pp 907-19; ch 77 pp 921-37.
- Feb 11 (T) **Discussion 7: Class Presentations I.**
- Feb 13 (R) **Lecture 12: Guest Lecture Series-Clinical:** Richard C. Padgett, MD, Cardiology, Oregon Cardiology Associates, Eugene, OR. *Clinical Cardiology, Case Studies & Recent Advances*. DLN pp E-1 thru E-14.
- Feb 18 (T) **Lecture 13:** II. Reproductive Physiology Overview, Ovarian & Menstrual Cycle, Birth Control Techniques, Introduction to Infertility. **Readings:** G&H ch 81 pp 987-1002; ch 80 pp 973-86.
- Feb 18 (T) **Discussion 8: Quiz 4** - Covers **Lectures 8 & 10** (CV Physiology) **& 12.** Feedback on Papers (continued). **Additional Assignment:** Endocrine case histories to prepare for Dr. Cirullo. **Readings:** DLN pp 8-1 thru 8-8.
- Feb 20 (R) **Lecture 14: Guest Lecture Series-Clinical:** Ron Cirullo, MD, PhD, Internal Medicine, Endocrinology, Diabetes Mellitus & Thyroid Disorders, PeaceHealth Medical, Eugene, OR. *Clinical Correlates in Endocrinology*. **Readings:** DLN pp F-1 thru F-10.
- Feb 25 (T) **Lecture 15: Guest Lecture Series-Clinical:** Paul F. Kaplan, MD, OHSU, U of O Student Health Center & Department of Human Physiology, Eugene, OR. *Reproductive Steroid Hormones & Cardiovascular Function in Young Healthy Women*. **Readings:** DLN pp G-1 thru G-8.
- Feb 25 (T) **Discussion 9: Class Presentations II.**

- Feb 27 (R) **Lecture 16: Quiz 5** -covers **Lectures 10** (part II.), **11 & 13** (Endocrinology & Reproduction), **14 & 15** (110 WIL). Break. Fetal & Neonatal Physiology, Fetal Blood Flow, Pediatrics, Children & Development. **Readings:** G&H ch 83 pp 1019-28; ch 23 pp 269-72.
- Mar 4 (T) **Lecture 17: Guest Lecture Series-Clinical:** Pilar Bradshaw, MD, PeaceHealth Medical Group, Eugene, OR. *Pediatrics: Introduction & Cases*. **Readings:** DLN pp H-1 thru H-6.
- Mar 4 (T) **Discussion 10: Class Presentations III.**
- Mar 6 (R) **Lecture 18:** Eye I: Anatomy & Optics of Vision; II: Retinal Receptor & Neural Function; III: Central Neurophysiology of Vision. **Readings:** G&H ch 49, 50 pp 597-621; ch 51 pp 623-4.
- Mar 11 (T) **Lecture 19: Guest Lecture Series-Clinical:** Annette Chang Sims, MD; Drs. Fine, Hoffman, Packer & Sims, Ophthalmologists, Eugene, OR. *Ophthalmology: The Medical & Surgical Treatment of Eye Diseases*. **Readings:** I-1 thru I-10.
- Mar 11 (T) **Discussion 11: Vision Lab with Eye Dissections. Readings:** DLN pp 11-1 thru 11-3.
- Mar 13 (R) **Lecture 20: Quiz 6** -covers **Lectures 16, 17, 18, 19** (110 WIL). Break. Thoughts on applying to graduate schools in medicine & allied health. Final comments by Pat.
- Mar 18 (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 (25%)
 Quizzes (25%)
 Class Presentation (25%)
 Research Paper (25%)