University of Oregon
Department of Biology

Course: BI 358 Investigations in Medical Physiology, CRN 21508, 04 cr, Lecture: 8:30-9:50 TR 110 Willamette (WIL) + Discussion: CRN 21509 10:00-11:50 T or CRN 21510 12:00-13:50 T or CRN 21511 14:00-15:50 T, 5 Klamath (KLA), Winter 2012.

Instructor: V. Pat Lombardi, 73A KLA, 541-346-4536, lombardi@uoregon.edu
Office Hr: M, 10:30-11:30 and by appointment.
Discussion Coordinators: Andrew Cvitanovich, TBA, TBA, cvitano@uoregon.edu
Jennifer Hampton, TBA, TBA, jhampton@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), 2012. [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, 6th/5th/4th ed*. Brooks/Cole, Thomson Learning, 2007, 2004, 2001. [On 2 hr Reserve in Science Library.]

Sherwood L (LS2). *Fundamentals of Physiology: A Human Perspective, 4th/3rd/2nd ed*. Brooks/Cole, Thomson Learning, 2012, 2006, 1995. [On 2 hr Reserve in Science Library.]

See Course Reserve List http://libweb.uoregon.edu/ for additional excellent references. *NB*: Click on green tab *Course Reserves*, then type in Lombardi as *Instructor*.

Tentative Outline:

Jan 10 (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 10 (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 17 (T) (5 KLA + begin personal search outside of lab).

Jan 12 (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 17 (T) **Lecture 3**: **Guest Lecture Series-Clinical**: Douglas Bovee, MD, Addiction & Internal Medicine, Eugene, OR. *Pharmacology of Drugs of Addiction: Pathophysiology, Adverse Effects & Case Presentations.* **Readings**: DLN pp B-1 thru B-7 + http://learn.genetics.utah.edu/content/addiction/drugs/mouse.html.

Jan 17 (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 19 (R) **Lecture 4**: Gastrointestinal Anatomy & Physiology . **Readings**: G&H ch 62, 63 & 64, pp 753-88.

Jan 24 (T) **Lecture 5**: I. Digestion & Absorption. II. Nutrition & Disease Prevention. **Readings**: G&H ch 65 pp 789-805; ch 71 pp 843-57.

Jan 24 (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 26 (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 31 (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 link.

Jan 31 (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.

Feb 2 (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 218-20; ch 21 pp 246-53; ch 68 pp 819-30; DLN pp E-1 thru E-17.

Feb 7 (T) **Lecture 9: Guest Lecture Series-Clinical**: Kraig W. Jacobson, MD, Allergy & Asthma Associates, Eugene, OR. *Immunology, Asthma & Allergy.* **Readings**: DLN pp D-1 thru D-15.

Feb 7 (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 cvitano@uoregon.edu*** or ***jhampton@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 9 (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 14 (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 14 (T) **Discussion 7: Class Presentations I.**

Feb 16 (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 21 (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 21 (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 23 (R) **Lecture 14: Guest Lecture Series-Clinical**: Ron Cirullo, MD, PhD, Internal Medicine, Endocrinology, Diabetes Mellitus & Thyroid Disorders, PeaceHealth Medical, Eugene, OR. *Endocrinology & Clinical Case Presentations.* **Readings**: DLN pp F-1 thru F-10.

Feb 28 (T) **Lecture 15: Guest Lecture Series-Clinical**: Paul F. Kaplan, MD, OHSU, U of O Student Health Center & Department of Human Physiology, Eugene, OR. *Infertility: Causes, Treatments & Current Research.* **Readings**: DLN pp G-1 thru G-8.

Feb 28 (T) **Discussion 9: Class Presentations II.**

Mar 1 (R) **Lecture 16: *Quiz 5*** -covers **Lectures 10 & 11** (Endocrinology), **13, 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 6 (T) **Lecture 17: Guest Lecture Series-Clinical**: Pilar Bradshaw, MD, PeaceHealth Medical Group, Eugene, OR. *Pediatrics & Clinical Case Presentations.* **Readings**: DLN pp H-1 thru H-6.

Mar 6 (T) **Discussion 10: Class Presentations III.**

Mar 8 (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 13 (T) **Lecture 19**: **Guest Lecture Series-Clinical**: Annette Chang Sims, MD; Drs. Fine, Hoffman, Packer & Sims, Ophthalmologists, Eugene, OR. *Clinical Evaluation & Treatment of Cataracts & Glaucoma.* **Readings**: I-1 thru I-10.

Mar 13 (T) **Discussion 11: Vision Lab with Eye Dissections. Readings**: DLN pp 11-1 thru 11-3.

Mar 15 (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 20 (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%)