

Biocore 485: Organismal Biology Fall 2016

<u>Lecture#-Day</u>	<u>Date</u>	<u>Instructor</u>	<u>Topic</u>	<u>Reading</u>
Unit 1 - Control Systems				
1-T	Sept. 6	Team	Key physiological concepts, feedback regulation	Watch Course Introduction video
2-R	Sept. 8	Johnson & Bethke	Ions are everywhere	Chapter 12: pp.312-318
M	Sept. 12	Discussion		
3-T	Sept. 13	Johnson	Neurobiology 1: Membrane Potential	Chapter 12: pp. 305-324
4-R	Sept. 15	Johnson	*Neurobiology 2: Action Potentials and Conduction	Chapter 12: pp. 305-324 Chapter 12: pp. 330-335
M	Sept. 19	Discussion		
5-T	Sept. 20	Johnson	Neurobiology 3: Synaptic Transmission	Chapter 13: pp. 337-356
6-R	Sept. 22	Johnson	*Neurobiology 4: Neuroplasticity	Chapter 13: pp. 360-368
M	Sept. 26	Discussion	Mini-exam 1: lectures 1- 6	
7-T	Sept. 27	Alarid	Endocrine System I: General Principles of Endocrinology	Chapter 16: pp. 430-437, Appendix K: Introduction to Endocrine Principles
8-R	Sept. 29	Alarid	Endocrine System 2: Hypothalamic-Pituitary & Axis Control Systems	Chapter 16: 437-445; Control of Endocrine Secretion: The Vertebrate Pituitary Gland, The Mammalian Stress Response
M	Oct. 3	Discussion	<i>Exam wrapper due Oct. 6</i>	
9-T	Oct. 4	Alarid	Endocrine System 3: Hormonal Control of Reproduction	Chapter 17: pp 480-495: Reproductive endocrinology of placental mammals
10-R	Oct. 6	Alarid	*Endocrine System 4: Dual Hormone Control System	Chapter 16: pp 445-454: Endocrine Control of Nutrient Metabolism and Calcium
M	Oct. 10	Discussion		
Unit 2 – Integrative Organ Systems				
11-T	Oct. 11	Alarid	Endocrine System 5: Making Logical Conclusions based on Evidence	Chapter 16: pp 457-463: Metamorphosis
12-R	Oct. 13	Alarid	*Endocrine wrap-up	
M	Oct. 17	Discussion	Mini-exam 2: lectures 7- 12	
13-T	Oct. 18	Rosen	Osmo1: Regulation of Water and Salt Physiology	700-703,717-732, 737-742

14-R	Oct. 20	Rosen	Osmo2: Excretory/Osmoregulatory System	Textbook sections: Mammalian Kidney and Nitrogen Disposition and Excretion (761-777; 781-785) 430-442
M	Oct. 24	Discussion	<i>Exam wrapper due Oct. 31</i>	
15-T	Oct. 25	Girard	Cardiovascular / Respiratory 1	Ch 22: pp 585-598 gas exchange
16-R	Oct. 27	Girard	*Cardiovascular / Respiratory 2	Ch 24: pp. 635-666 O ₂ and CO ₂
M	Oct. 31	Discussion		
17-T	Nov. 1	Girard	Cardiovascular / Respiratory 3	Ch 25: pp. 676-700 circulation
18-R	Nov. 3	Girard	*Cardiovascular / Respiratory 4	CASE STUDIES and review
M	Nov. 7	Discussion	Mini-exam 3: lectures 13- 18	
19-T	Nov. 8	Girard	Digestive Physiology1	Review article: Furness, Cottrell and Bravo (2015). Comparative physiology of digestion.
20-R	Nov. 10	Girard	Digestive Physiology 2	Research article: Secor (2008). Digestive physiology of the Burmese python.
M	Nov. 14	Discussion		
21-T	Nov. 15	Girard	*Digestive Physiology 3	to be determined
Unit 3 - Plant Physiology				
22-R	Nov. 17	Bethke	Plants: Plasticity and unity	5-10, 39-47, 572-578, 505-506
M	Nov. 21	Discussion	Mini-exam 4: lectures 19- 22	
23-T	Nov. 22	Bethke	Water: Water potential and transport pathways	Chapter 3 (Water and plant cells) and 295-302.
Thanksgiving Recess (Nov 24 – 27)				
M	Nov. 28	Discussion		
24-T	Nov. 29	Bethke	Water: Whole plant responses	Chapter 4 (Water balance of plants) and 755-758.
25-R	Dec. 1	Bethke	*The central role of light in plant growth	591-605, 540-542. Scan: 447-462.
M	Dec. 5	Discussion		
26-T	Dec. 6	Bethke	Seeds	513-525.
27-R	Dec. 8	Bethke	*Elongation growth and fruit ripening	Chapter 15 provides an overview of Signals and Signal transduction for plant growth regulators. For this class we will focus on on gibberellins and ethylene.

M	Dec. 12	Discussion		
28-T	Dec. 13	Bethke	*Finding mineral nutrients	119-120, 122-123, 133-140. Review Chapter 6, Solute transport, if needed.
29-R	Dec. 15	Bethke	Surviving cool and cold conditions + exam review	605-611.
Saturday	Dec. 17 10:05am		Final exam: lectures 23- 29 + Integrative Questions	

* 10 graded in-class group problems

Textbooks: 1. **Animal Physiology** (4th edition) by Hill et al., 2016; 2. **Plant Physiology** (6th edition) by Taiz & Zeiger, 2015; 3. **The World of the Cell** (9th edition) by Hardin & Bertoni. Benjamin Cummings, 2016