Bios 240 Homeostasis: The Physiology of Plants and Animals (Fall 2008)

Course Information (course call number 11968):

Instructors:

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Dr. Miquel Gonzalez-Meler	355-3928	mmeler@uic.edu	Office: 3338 SES

Teaching Assistant: Elena Blanc-Betes mblanc7@uic.edu
meeting hours and place TBA

Lectures: 2-3:15 Tuesdays, Thursdays LC F1

Office Hours:
Drs. Alford and Gonzalez-Meler will be available by appointment (contact via email).

Goals and Objectives: To present students with a background in the principles by which eukaryotes maintain their internal functional environment.

This course covers the basic physiology of plants and animals in the context of the theme "Homeostasis". It focuses on how organisms adjust and respond to changes in their internal and external environments. The material considers the basic biophysical challenges faced by cells and organisms and uses a comparative approach to understand the means by which these challenges have been met by living organisms. We specifically chose to emphasize the ways in which cells work together to hold the internal conditions of the organism or its physiological processes fairly constant (homeostasis).

Suggested Texts (exams will be based on material presented in class):
Animal Physiology (2004). Hill, R. W., Wyse, G.A., & Anderson, M. Sinnauer Associates, Sunderland, MA.
Introduction to Plant Physiology (2004) 3rd edition, Hopkins, W.G., & Huner, H.P.A. Wiley & Sons.

Attendance: Attendance is expected at all scheduled lectures and laboratories; each exam will be based on material discussed in class. Attendance is required at all scheduled exams, except in cases of illness, mandatory religious obligations or official University activities.

Supplementary materials: Will be put on the Bios 240 Blackboard website.

Examinations: There will be a total of three exams. Each exam will be based on material discussed in class and include only material presented before that exam. Plagiarism and cheating are not tolerated. The final exam will be cumulative. All exams will be at the current lecture classroom (Fall 08 - F1). To be excused from attending an exam an official medical certificate or an affidavit is required. No makeup exams will be given. Official conflicts on final exams should be communicated to us at least 10 days in advance.

Grading: Each student's final grade will be computed from total points obtained from the three exams (30%, 30% and 40% respectively). Exams will include multiple choice questions and other formats including short-essay questions. Students need to properly register for a class in order to earn academic credit. Retroactive enrollments will not be processed.

Date	Speaker and Topic		Assignments
Aug 26	Gonzalez-Meler /Alford	Introduction to homeostasis	Hopkins chapter 1 & Hill chapter 3
Aug 28	Gonzalez-Meler	Enzymology and metabolic control	Hopkins chapter 13 pp. 262-272, 15 & Hill chapter 2
Sept 2	Alford	Ion gradients, voltages, channels, porters	Hill chapter 11, Hopkins Ch 15
Sept 4	Alford	Electrical and chemical means of communication	Hill chapter11,12
Sept 9	Alford	Signal transduction pathways & endocrine signaling	Hill chapter 11,12
Sept 11	Alford	Osmotic balance and regulation	Hill chapter 25
Sept 16	Gonzalez-Meler	Water in plants	Hopkins chapter 10
Sept 18	Gonzalez-Meler	Water movement; evapotranspiration	Hopkins chapter 11-12
Sept 23	Gonzalez-Meler	Plant photosynthesis – light harvesting	Hopkins chapter 3&4
Sept 25	Gonzalez-Meler	Plant photosynthesis – carbon uptake	Hopkins chapter 5
Sept 30	**EXAM 1 through 9/25**		
Oct 2	Gonzalez-Meler	Plant photosynthesis – regulation & pH	Hopkins chapter 5&6
Oct 7	Gonzalez-Meler	Plant photosynthesis – C4, CAM- Phloem transport	
Oct 9	Alford	Gas exchange	Hill chapter 22
Oct 14	Alford	Regulation of pH	Hill chapter 22
Oct 16	Alford	Energy & metabolism	Hill chapter 5
Oct 21	Alford	Essentials of muscle contraction	Hill chapter 17
Oct 23	Alford	Mechanisms of movement	Hill chapter 17, 18
Oct 28	Alford	Locomotion	Hill chapter 18
Oct 30	Gonzalez-Meler	Plants and the light environment	Hopkins chapter 17&18
Nov 4	**EXAM 2 through 10/30**		
Nov 6	Alford	Circadian rhythms & light receptors	Hill Ch 10
Nov 11	Gonzalez-Meler	Homeostasis induced by	Hopkins chapter 18&19

	light	
Nov 13	Gonzalez-Meler Temperature, membrane fluidity	Hopkins Ch 20, Hill Ch 8
Nov 18	Gonzalez-Meler Plants and animals coping with high temperature	Hopkins 20, Hill
Nov 20	Gonzalez-Meler/Alford Plants and animals coping with low temp	Hopkins 21; Hill
Nov 25	Alford/Gonzalez-Meler low temp (cont.) Homeostasis case studies & examples I: plant stress physiology.	
Nov 27	*Thanksgiving*	
Dec 2	Gonzalez-Meler/ Alford Homeostasis case studies & examples II.	
Dec 4	Gonzalez-Meler/ Alford Integration and summary of concepts in the course	
	FINAL EXAM	

Final exam Tuesday Dec 9th 3:30-5:30 at LC F1.

LET US KNOW OF CONFLICTS IN ADVANCE

1. **Exam Conflicts**. The exam schedule is designed to prevent conflicts. But just in case, here is what happens if you have an exam conflict:

    - For terms Summer 2008, Fall 2008, Spring 2009 – course listed ***second*** in the online Schedule of Classes has precedence.
    - Regularly scheduled Program PM exams have precedence over combined-section exams.
    - A student with an exam conflict is responsible for arranging a makeup exam with his or her instructor