

ANIMAL PHYSIOLOGY LAB

BIPN 105 (Spring, 2012)

INSTRUCTOR:

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The purpose of this course is to provide experience with some of the experimental methods of physiology, help students obtain a better understanding of the principles of physiology, and learn how to communicate science in a professional manner. This course is a companion to BIPN 100 (and BIPN 100 is a prerequisite - concurrent enrollment is okay).

There will be three lectures (Center 113, M/W/F 12:00 - 12:50 p.m.) and two laboratory sessions (York 2426, M/W 1:00 - 6:00 p.m. or Tu/Th 12:30 - 5:30 p.m.) per week. The experiments will be written up in three lab reports. The first two lab reports will be written individually and each report covers two experiments. The final report covers a group project and will be written by the lab group. At the end of the quarter, each lab group will present a short symposium on their project. Homeworks and a comprehensive final will be given.

lab reports: #1 and #2 - each 20% of course grade
#3 - 15% of course grade (all lab reports must be completed to pass)
symposium: 5% of course grade (participation is required to pass)
final/homeworks: 40% of course grade (the final must be completed to pass)

REQUIRED MATERIALS

- Lab manual from Soft Reserves, Student Center
- Packet of problem sets, sample lab report, grading criteria, etc. from Soft Reserves, Student Center
- Text: Human Physiology, Silverthorn, 5th edition
- USB flash drive

BIPN 105 SCHEDULE (Spring, 2012)

<u>DATES</u>	<u>ACTIVITY</u>	<u>TOPIC</u>	<u>READING</u> (Lab Manual/Silverthorn)
April 2	Lecture	Biophysical Instrumentation	Introduction
April 2, 3	Lab	Introduction to Instrumentation	#1
April 4	Lecture	RBC Membrane, Osmosis	158-163
April 4, 5	Lab	Properties of RBC Membranes	#2
April 6	Problem Solving	Equipment and RBCs	Problem Set #1
April 9 (Monday)		RBC Membrane Homework due (experiment #2)	
April 9	Lecture	Basis/Propagation of Action Potentials	164-171, 249-273
April 9, 10	Lab	Sciatic Nerve Studies in the Frog	#3
April 11	Lecture	Neuromuscular Transmission	273-281
April 11, 12	Lab	Neuromuscular Studies in the Frog	#4
April 16	Lecture	Lab Reports	
April 16, 17	Lab	Repeat Day	
April 18	Lecture	Muscle Mechanics	407-432
April 18, 19	Lab	Muscle Studies in the Frog	#5
April 20	Problem Solving	Sciatic Nerve and NMJ	Problem Set #2
April 23 (Monday)		Skeletal Muscle Homework due (experiment #5)	
April 23	Lecture	Smooth Muscle Physiology	432-439
April 23, 24	Lab	Rat Uterus Preparation	#7
April 25 (Wednesday)		Report #1 part 1 (Sciatic Nerve - exp. #3) due in lecture	
April 25	Lecture	Cardiac Biomechanics	478-481, 494-505
April 25, 26	Lab	Starling's Law Video	#8
April 27	Problem Solving	Skeletal and Smooth Muscle	Problem Set #3
April 30 (Monday)		Report #1 part 2 (NMJ - exp. #4) due in lecture	
April 30	Lecture	Cardiac Electrophysiology	481-491
April 30/May 1	Lab	Cardiac Physiology in the Frog	#9
May 2 (Wednesday)		Smooth Muscle Homework due (experiment #7)	
May 2	Lecture	Fluid Balance, Edema, and Blood Flow	513-515, 526-532
May 2, 3	Lab	Hemodynamics in the Frog	#10

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<u>DATES</u>	<u>ACTIVITY</u>	<u>TOPIC</u>	<u>READING</u> (Lab Manual/Silverthorn)
May 7	Lecture	Student Projects Explanation/Sign-ups	
May 7, 8	Lab	Repeat Day	
May 9	Lecture	Principles of Electrocardiography	480-484
May 9, 10	Lab	Human Electrocardiogram	#11
May 11	Problem Solving	PV loop, Frog ECG, Fluid Balance	Problem Set #4
May 14	Lecture	Non-invasive Cardiac Evaluation	516-521
May 14, 15	Lab	Monitoring Circulation in Humans	#12
May 16 (Wednesday)		Report #2 part 1 (Frog ECG - exp. #9) due	
		<u>Turn it in at the lab between 12:00 and 1:00 p.m. (there is no lecture)</u>	
May 16, 17		Discuss Student Projects in lab - one page summary due	
May 21 (Monday)		Report #2 part 2 (Fluid Balance - exp. #10) due	
		<u>Turn it in at the lab between 12:00 and 1:00 p.m. (there is no lecture)</u>	
May 21, 22	Lab	Student Projects	#13
May 23, 24	Lab	Student Project Repeat Day #1	
May 25	Problem Solving	Human ECG, Heart Sounds, Murmurs	Problem Set #5
May 28, 29 (Monday/Tuesday)		Memorial Day Holiday (no lecture or lab)	
May 30, 31	Lab	Student Project Repeat Day #2	
June 4	Lecture	Renal Physiology	136-157, 623-669
June 4, 5	Lab	Human Kidney Function	#14
June 6, 7		STUDENT SYMPOSIUM	
		Report #3 (Student Project - exp. 13) due at symposium	
June 8	Problem Solving	Kidney and Student Projects	Problem Set #6
Exam Week		FINAL EXAM	
		Wednesday June 13	
		11:30 a.m. - 2:30 p.m.	