

ANIMAL PHYSIOLOGY LAB

BIPN 105 (Spring, 2015)

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).

There will be three lectures (Center 216, 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, 6th edition (5th and 4th edition reading lists are also provided)
- USB flash drive
- Safety glasses

BIPN 105 SCHEDULE (Spring, 2015)

<u>DATES</u>	<u>ACTIVITY</u>	<u>TOPIC</u>	<u>READING</u> (Lab Manual/Silverthorn 6 th ed.)
March 30	Lecture	Biophysical Instrumentation	Introduction
March 30, 31	Lab	Introduction to Instrumentation	#1
April 1	Lecture	RBC Membrane, Osmosis	132-135
April 1, 2	Lab	Properties of RBC Membranes	#2
April 3	Problem Solving	Equipment and RBCs	Problem Set #1
April 6 (Monday)		RBC Membrane Homework due (experiment #2)	
April 6	Lecture	Basis/Propagation of Action Potentials	160-166, 239-266
April 6, 7	Lab	Sciatic Nerve Studies in the Frog	#3
April 8	Lecture	Neuromuscular Transmission	266-273
April 8, 9	Lab	Neuromuscular Studies in the Frog	#4
April 13	Lecture	Lab Reports	
April 13, 14	Lab	Repeat Day	
April 15	Lecture	Muscle Mechanics	399-421
April 15, 16	Lab	Muscle Studies in the Frog	#5
April 17	Problem Solving	Sciatic Nerve and NMJ	Problem Set #2
April 20 (Monday)		Skeletal Muscle Homework due (experiment #5)	
April 20	Lecture	Smooth Muscle Physiology	427-434
April 20, 21	Lab	Rat Uterus Preparation	#6
April 22 (Wednesday)		Report #1 part 1 (Sciatic Nerve - exp. #3) due in lecture	
April 22	Lecture	Cardiac Biomechanics	471-474, 487-501
April 22, 23	Lab	Starling's Law Video	#7
April 24	Problem Solving	Skeletal and Smooth Muscle	Problem Set #3
April 27 (Monday)		Report #1 part 2 (NMJ - exp. #4) due in lecture	
April 27	Lecture	Cardiac Electrophysiology	475-487
April 27, 28	Lab	Cardiac Physiology in the Frog	#8
April 29 (Wednesday)		Smooth Muscle Homework due (experiment #6)	
April 29	Lecture	Fluid Balance, Edema, and Blood Flow	509-512, 528-533
April 29, 30	Lab	Hemodynamics in the Frog	#9

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<u>DATES</u>	<u>ACTIVITY</u>	<u>TOPIC</u>	<u>READING</u>
			(Lab Manual/Silverthorn 6 th ed.)
May 4	Lecture	Student Projects Explanation/Sign-ups	
May 4, 5	Lab	Repeat Day	
May 6	Lecture	Principles of Electrocardiography	846-490
May 6, 7	Lab	Human Electrocardiogram	#10
May 8	Problem Solving	PV loop, Frog ECG, Fluid Balance	Problem Set #4
May 11	Lecture	Non-invasive Cardiac Evaluation	513-518
May 11, 12	Lab	Monitoring Circulation in Humans	#11
May 13 (Wednesday)		Report #2 part 1 (Frog ECG - exp. #8) due	
		<u>Turn it in at the lab between 12:00 and 1:00 p.m. (there is no lecture)</u>	
May 13, 14		Discuss Student Projects in lab - one page summary due	
May 18 (Monday)		Report #2 part 2 (Fluid Balance - exp. #9) due	
		<u>Turn it in at the lab between 12:00 and 1:00 p.m. (there is no lecture)</u>	
May 18, 19	Lab	Student Projects	#12
May 20, 21	Lab	Student Project Repeat Day #1	
May 25, 26 (Monday/Tuesday)		Memorial Day Holiday (no lecture or lab)	
May 27, 28	Lab	Student Project Repeat Day #2	
May 29	Problem Solving	Human ECG, Heart Sounds, Murmurs	Problem Set #5
June 1	Lecture	Renal Physiology	139-160, 627-646
June 1, 2	Lab	Human Kidney Function	#13
June 3, 4		STUDENT SYMPOSIUM	
		Report #3 (Student Project - exp. #12) due at symposium	
June 5	Problem Solving	Kidney and Student Projects	Problem Set #6
Exam Week		FINAL EXAM	
		Wednesday June 10	
		11:30 a.m. - 2:30 p.m.	