ANIMAL PHYSIOLOGY LAB

BIPN 105 (Spring, 2016)

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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 214, 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, 7th edition (6th, 5th, and 4th edition reading lists are also provided)
- USB flash drive
- Safety glasses

BIPN 105 SCHEDULE (Spring, 2016)

DATES	ACTIVITY	TOPIC	READING
			(Lab Manual/Silverthorn 7th ed.)
March 28	Lecture	Biophysical Instrumentation	Introduction
March 28, 29	Lab	Introduction to Instrumentation	#1
March 30	Lecture	RBC Membrane, Osmosis	125-129
March 30/31	Lab	Properties of RBC Membranes	#2
April 1	Problem Solving	Equipment and RBCs	Problem Set #1
April 4 (Monday)	**RBC Membrane Homework due (experiment #2)**		
April 4	Lecture	Basis/Propagation of Action Potentials	153-158, 227-252
April 4, 5	Lab	Sciatic Nerve Studies in the Frog	#3
April 6	Lecture	Neuromuscular Transmission	252-259
April 6, 7	Lab	Neuromuscular Studies in the Frog	#4
April 8	Problem Solving	Sciatic Nerve and NMJ	Problem Set #2
April 11	Lecture	Lab Reports	
April 11, 12	Lab	Repeat Day	
April 13	Lecture	Muscle Mechanics	378-399
April 13, 14	Lab	Muscle Studies in the Frog	#5
April 18 (Monday)	**Skeletal Muscle Homework due (experiment #5)**		
April 18	Lecture	Smooth Muscle Physiology	403-411
April 18, 19	Lab	Rat Uterus Preparation	#6
April 20 (Wednesday)	**Report #1 part 1 (Sciatic Nerve - exp. #3) due in lecture**		
April 20	Lecture	Cardiac Biomechanics	443-447, 461-472
April 20, 21	Lab	Starling's Law Video	#7
April 22	Problem Solving	Skeletal and Smooth Muscle	Problem Set #3
April 25 (Monday)	**Report #1 part 2 (NMJ - exp. #4) due in lecture**		
April 25	Lecture	Cardiac Electrophysiology	447-461
April 25, 26	Lab	Cardiac Physiology in the Frog	#8
April 27 (Wednesday)	**Smooth Muscle Homework due (experiment #6)**		
April 27	Lecture	Fluid Balance, Edema, and Blood Flow	478-481, 496-501
April 27, 28	Lab	Hemodynamics in the Frog	#9

BIPN 105 SCHEDULE (Spring, 2016)

DATES	ACTIVITY	TOPIC	READING (Lab Manual/Silverthorn 7th ed.)
May 2	Lecture	Student Projects Explanation/Sign-ups	
May 2, 3	Lab	Repeat Day	
May 4	Lecture	Principles of Electrocardiography	457-461
May 4, 5	Lab	Human Electrocardiogram	#10
May 6	Problem Solving	PV loop, Frog ECG, Fluid Balance	Problem Set #4
May 9	Lecture	Non-invasive Cardiac Evaluation	482-486
May 9, 10	Lab	Monitoring Circulation in Humans	#11
May 11 (Wednesday)		**Report #2 part 1 (Frog ECG - exp. #8) due**	
		Turn it in at the lab between 12:00 and 1:00 p.m. (there is no lecture)	
May 11, 12		**Discuss Student Projects in lab - one page summary due**	
May 16 (Monday)		**Report #2 part 2 (Fluid Balance - exp. #9) due**	
		Turn it in at the lab between 12:00 and 1:00 p.m. (there is no lecture)	
May 16, 17	Lab	Student Projects	#12
May 18, 19	Lab	Student Project Repeat Day #1	
May 20	Problem Solving	Human ECG, Heart Sounds, Murmurs	Problem Set #5
May 23, 24	Lab	Student Project Repeat Day #2	
May 25	Lecture	Renal Physiology	132-152, 590-608
May 25, 26	Lab	Human Kidney Function	#13
May 30, 31	**No lecture/lab**	**MEMORIAL DAY**	
June 1, 2		**STUDENT SYMPOSIUM**	
		Report #3 (Student Project - exp. #12) due at symposium	
June 3	Problem Solving	Kidney and Student Projects	Problem Set #6

Exam Week **FINAL EXAM**
Wednesday June 8
11:30 a.m. - 2:30 p.m.