ANIMAL PHYSIOLOGY LAB

BIPN 105 (Fall, 2019)

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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 (HSS 1330, M/W/F 12:00 - 12:50 p.m.) and two laboratory sessions (York 2426, M/W 1:00 - 5:50 p.m. or Tu/Th 3:00 - 7:50 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 (UCSD Bookstore)
- Text: Human Physiology, Silverthorn, 7th edition (6th, 5th, and 4th edition reading lists are also provided)
- Syllabus/course information/problem sets (TritonEd)
- USB flash drive
- Safety glasses

BIPN 105 SCHEDULE (Fall, 2019)

DATES	ACTIVITY	TOPIC	READING (Lab Manual/Silverthorn 7th ed.)
Sept. 26	Lab	First Day check-in and then leave	
Sept. 27	No Lecture	No Lecture	
Sept. 30	Lecture	Biophysical Instrumentation	Introduction
Sept. 30/Oct. 1	Lab	Introduction to Instrumentation	#1
Oct. 2	Lecture	RBC Membrane, Osmosis	125-129
Oct. 2, 3	Lab	Properties of RBC Membranes	#2
Oct. 4	Problem Solving	Equipment and RBCs	Problem Set #1
Oct. 7 (Monday)	**RBC Membrane Homework (experiment #2) due in lecture**		
Oct. 7	Lecture	Basis/Propagation of Action Potentials	153-158, 227-252
Oct. 7, 8	Lab	Sciatic Nerve Studies in the Frog	#3
Oct. 9	Lecture	Neuromuscular Transmission	252-259
Oct. 9, 10	Lab	Neuromuscular Studies in the Frog	#4
Oct. 11	Problem Solving	Sciatic Nerve and NMJ	Problem Set #2
Oct. 14	Lecture	Lab Reports	
Oct. 14, 15	Lab	Repeat Day	
Oct. 16	Lecture	Muscle Mechanics	378-399
Oct. 16, 17	Lab	Muscle Studies in the Frog	#5
Oct. 21 (Monday)	**Skeletal Muscle Homework (experiment #5) due in lecture**		
Oct. 21	Lecture	Smooth Muscle Physiology	403-411
Oct. 21, 22	Lab	Rat Uterus Preparation	#6
Oct. 23 (Wednesday)	**Report #1 part 1 (Sciatic Nerve - exp. #3) due in lecture**		
Oct. 23	Lecture	Cardiac Biomechanics	443-447, 461-472
Oct. 23, 24	Lab	Starling's Law Video	#7
Oct. 25	Problem Solving	Skeletal and Smooth Muscle	Problem Set #3
Oct. 28 (Monday)	**Report #1 part 2 (NMJ - exp. #4) due in lecture**		
Oct. 28	Lecture	Cardiac Electrophysiology	447-461
Oct. 28, 29	Lab	Cardiac Physiology in the Frog	#8
Oct. 30 (Wednesday)	**Smooth Muscle Homework (experiment #6) due in lecture**		
Oct. 30	Lecture	Fluid Balance, Edema, and Blood Flow	478-481, 496-501
Oct. 30, 31	Lab	Hemodynamics in the Frog	#9

BIPN 105 SCHEDULE (Fall, 2019)

DATES	ACTIVITY	TOPIC	READING (Lab Manual/Silverthorn 7th ed.)
Nov. 4	Lecture	Student Projects Explanation/Sign-ups	
Nov. 4, 5	Lab	Repeat Day	
Nov. 6	Lecture	Principles of Electrocardiography	457-461
Nov. 6, 7	Lab	Human Electrocardiogram	#10
Nov. 8	Problem Solving	PV loop, Frog ECG, Fluid Balance	Problem Set #4
Nov. 11, 12	**No lecture/lab**	**VETERAN'S DAY**	
Nov. 13 (Wednesday)	**Report #2 part 1 (Frog ECG - exp. #8) due in lecture**		
Nov. 13	Lecture	Non-invasive Cardiac Evaluation	482-486
Nov. 13, 14	Lab	Monitoring Circulation in Humans	#11
Nov. 13, 14 (Wednesday/Thursday)	**Discuss Student Projects in Lab - one page summary due**		
Nov. 18 (Monday)	**Report #2 part 2 (Fluid Balance - exp. #9) due**		
		Turn it in at the lab between noon and 1:00 p.m.	
Nov. 18, 19	Lab	Student Projects	#12
Nov. 20, 21	Lab	Student Project Repeat Day #1	
Nov. 22	Problem Solving	Human ECG, Heart Sounds, Murmurs	Problem Set #5
Nov. 25, 26	Lab	Student Project Repeat Day #2	
Nov. 27, 28	**No lecture/lab**	**THANKSGIVING**	
Dec. 2	Lecture	Renal Physiology	132-152, 590-608
Dec. 2, 3	Lab	Human Kidney Function	#13
Dec. 4, 5		**STUDENT SYMPOSIUM**	
		Report #3 (Student Project - exp. #12) due at the symposium	
Dec. 6	Problem Solving	Kidney and Student Projects	Problem Set #6

Exam Week **FINAL EXAM**
Thursday December 12
11:30 a.m. - 2:30 p.m.