

Course Objectives:

(1) To appreciate the mind-boggling miracle of a functioning vertebrate body, (2) to be able to explain complex physiological mechanisms, and (3) to learn anatomical terms, tissue histology, disease pathology and develop problem solving skills.

week	Day - date	Activity/reading assignments
1	R- 1/15	INTRO TO COURSE; EXCITABLE CELL BASICS- Very brief neuro system overview; Diffusion, Ohm's, Fick, Osmosis, Osmotic pressure, Osmolarity G 4-8
2	T -1/20	ACTION POTENTIALS: , Gradients, Nernst, GHK, RMP; Na ⁺ /K ⁺ ATPase; Na ⁺ channels & K ⁺ channels; Ca ⁺⁺ and neurotransmitter release. G 30-35; 58-59. M 401-410
	R -1/22	GRADED VS ALL-OR-NONE: More on NT release; Synapses & summation; EPSP/IPSP; integration; graded vs all-or-none. G 51-57, 86-91; M 410-419
3	T -1/27	BASIC NEURO ANAT & HISTO: overview of PNS vs CNS; ANS vs SNS; symp vs parasymp; afferent vs efferent. Compound peripheral nerve, histo/cell anat of simple (multipolar) neuron. Functional Class: sensory, motor, interneurons & neuroglia. G 49-51; 58-61. M 387-396
	R -1/29	REFLEXES. Monosynaptic, pain-withdrawal, poly synaptic, cross-extensor. G 129-138, 93.M 502-508; SENSES intro G 122-128;
4	T -2/3	HEARING intro: Anatomy of ear + how we hear. G 173-182; Equilibrium. Semicircular canals, otolith organs, etc. Spin chair expt; G 186-187.
	R -2/5	OLFACTION. G 188-191. Begin VISION: Eye anat, retinal histology and cellular function. G 150-155, 159-162
5	T -2/10	SENSES: Finish Vision. G 166-169
	R -2/12	HIGHER BRAIN: emotion, memory, psychotropics. G 117 & selected from ch 15 & 16
6	T -2/17	Lecture EXAM 1
	R -2/19	MidSemester Break!
7	T -2/24	Basic anatomy of muscle & muscle cell; Sliding filament theory/cross bridge cycling; G 118-119; 65-73
	R -2/26	EC coupling, relaxation & muscle AP;
8	T -3/2	Single fiber properties; Length/tension, Power, Force, velocity Ganong; 68-69, 72-73.
	R -3/4	Motor Units/Fiber types- histology; Recruitment, size principle; Cellular Energy- immediate (ATP, PCr, CK), glycolytic & oxidative. G 74-78
9	T -3/9	Exercise adaptations & fatigue; hypertrophy, atrophy
	R -3/11	Lecture Exam 2: muscle physiology
10	15 th -19 th	!!! Spring Break- the whole week !!! 3/13 - 3/21 !!!
11	T-3/23	Blood: WB components; Life of RBC's; Hemostasis; Hb; O ₂ and CO ₂ transport. 669-674. Selected G Ch 27
	R -3/25	General structure/function of the heart & Major Vessels; flow properties; Microcirculation, bulk flow & lymphatics. Ganong, pp. 567, 579-598
12	T-3/30	Vascular Ftn: VSMC mechanics & reg; more flow/velocity/resistance/SA stuff. G 82-85, 579-589
	R-4/1	Specific Heart anatomy; cardiac cycle & parameters (CO, BP, MAP, EDP, LVD _{dev} P, dP/dt); G 567-578
13	T -4/6	ECG & pacemakers; More ECG; Cardiac AP; cardiomyocyte histo; conduction pathways. G.78-82, 549-555
	R -4/8	Frank-Starling; contractility; force/frequency, P-V curves, Wiggers diagrams.
14	T-4/13	Heart rate & blood pressure regulation (neural & hormonal). Ganong, pp. 599-613
	R-4/15	Exam 3: baseline/resting cv physiology;
15	T-4/20	No class- FASEB meeting
	R-4/22	CV changes with exercise./ CV disease 1: Atherosclerosis, hypertension; heart attacks
16	T-4/27	CV disease 2: Heart Failure, diabetes
17	M-4/30	Exam 4/Final: 8 am, 4/30 - ~50% cv disease & exercise; ~50% review/integrative

The Course Calendar (above) is LIKELY to change. Some days we may get as far as I anticipate, and some days we may not get through everything. Furthermore, depending on the lab material, and events in my life, it is likely that much of the course will change as we go!

Approximate Grading Breakdown:

On-line homework/quizzes (~1 assignment per week) \cong **10%** of total grade.

Lecture Exams: 4 exams \cong **45%** of total grade. Exam format: drawings, short answer, multi choice & essay.

Class and lab participation & attitude (subjective measures) \cong **5%** of total grade.

Lab exams \cong **40%** of total grade (3 total lab exams- weighted due to differences in amount of material covered on each).

“ \cong ” above indicates that final contribution of different assignments/exams to grade may vary slightly, or considerably (but similarly for all students in the class), depending on the events of the semester. If the grading is to change considerably, a new syllabus/course description will be handed out and discussed.

Exam dates/times are to be planned around- schedule conflicts should be worked out well in advance of exams. Anything discussed in class and covered in assigned reading is likely to be on exams. Occasionally some material may be covered solely in lecture or solely in readings. Such material is still fair game for exams.

I expect that you will check your e-mail regularly (once a day is sufficient; every other day might not be frequent enough) for notices/updates/assignments/clarifications/etc. You will be accountable for the assignments indicated and for information given in these e-mails (you need to read them!).

Lab Calendar

Week	Subject/activity/focus
1	Sheep brain dissection
2	<i>Sheep brain dissection & human peripheral nerves</i>
3	Nerves & brain review
4	Neuro Lab <i>exam</i>
5	Basic skeletal anatomy & bone physiology; Bones lab
6	<i>mid semester break</i>
7	Bones
8	Bones <i>EXAM</i>
9	Muscles
10	<i>Spring Break</i>
11	Muscles
12	Muscles <i>exam</i>
13	Heart
14	Heart & vessels
15	Heart/vascular <i>exam</i>
16	