Sensory & Motor Systems Neuroscience, BMSC-GA 4462 and G80/89.2202, Spring 2017

Lectures
Tuesdays & Thursdays, 10:00 am - 11:50
Downtown: Meyer Hall (6 Washington Place), Room 815, except Jan 26 & Feb 2 (Room 760)
Uptown: Alexandria 9th Floor Conference Room

Labs
Fridays, 9:30-12:30 (Group A) or 1:30-4:30 (Group B)
NS2 labs run in parallel to the course (similar to the Cellular Neuroscience course). Neuroscience PhD students should co-register for NEURL-GA 2204 (Lab in Neural Science II). Labs will be held most Fridays when there isn't a scheduled conference (see below).

Conferences
There are 5 conferences throughout the semester. The conferences are interleaved with the labs. The conference schedule is:

	Group A (Date, Time, Location)			Group B (Date, Time, Location)		
Conference 1	2/10	10 am – 12 noon	Meyer 815	2/10	1:30 – 3:30 pm	Meyer 815
Conference 2	3/10	10 am – 12 noon	Meyer 815	3/10	1:30 – 3:30 pm	Meyer 815
Conference 3	3/31	10 am – 12 noon	Alexandria 901	3/31	1:30 – 3:30 pm	Alexandria 901
Conference 4	4/21	10 am – 12 noon	Meyer 815	4/21	1:30 – 3:30 pm	Alexandria 901
Conference 5	5/5	10 am – 12 noon	Alexandria 901	5/5	1:30 – 3:30 pm	Alexandria 901

Exams and Grading
There will be 2 take-home exams, each counting for one-half of the final grade. The format of the exam questions will be short essays.

- Exam 1 will be distributed on March 10 and answers will be due March 17.
- Exam 2 will be distributed May 5 and answers will be due May 12.

Participation in the conferences is also required to receive credit for the course (see below for more detail on the Conferences). Each unexcused conference absence will result in a letter grade reduction (A to A-, B+ to B, etc.).

Textbook
Squire LR, Berg D, Bloom FE, du Lac S, Ghosh A, Spitzer NC (2012). *Fundamental Neuroscience (4th edition)*. San Diego: Academic Press.

Readings
A list of assigned readings from the textbook and from the primary literature can be found on the Syllabus page of the course website by lecture. PDFs of journal articles (and lecture slides) are available in the Resources tab.

Some readings are labeled as "secondary readings". We strongly encourage you to read all the papers, but for some topics there are quite a few papers assigned, as there often isn't a single review paper that covers all relevant material. At the same time, we do not expect you to read every word. Because of the overwhelming amount of scientific literature in every sub-area of neuroscience, you need to develop a skill for rapidly scanning the literature to glean the basics, and then be able to go back as needed for the

details. For topics with a long reading list, you should look through each of the "secondary readings" to see what's there, read the abstract and introduction, look at the figures and figure captions. This is the same as what you should do when exploring the literature in your area of research. Then, based on your interests and what you feel you need to know, you can pick and choose which of these "secondary readings" to read in more detail.

Conferences

Conferences are like journal club discussion sessions. Two (or more) papers will be assigned for each conference. Each student will be responsible for leading the discussion of one paper for one conference; we will distribute these assignments at the beginning of the semester. Students are not expected to prepare a lecture, but must be prepared to lead a discussion of the paper by providing an introduction to the topic, details of the hypotheses tested, methods used, and results found. Presenting students will need to place the paper in the broader context of its field, and this will likely require presenters to read additional papers. **Presenters should contact the faculty in charge of their conference well in advance to discuss their presentation and get suggestions for additional papers to aid their preparation for leading the conference.** The faculty members leading each conference are listed in the syllabus. Note that students should take the initiative in contacting the faculty member in charge of their conference, but if a problem arises contact Alexandra.Wesnousky@nyumc.org.

All students are required to read all the papers and contribute to the discussion. To aid preparation, you will be given specific questions to answer for each paper. Print your answers and hand them in at the end of each conference. Attendance is required. **Each unexcused conference absence will result in a letter grade reduction (A to A-, B+ to B, etc.).** More than one absence may result in no credit for the course.

Because the class is so large this year, we will split you into two sections/groups for each conference: group A and group B.

Grading

There will be 2 take-home exams, each counting for one-half of the final grade. The format of the exam questions will be short essays. Participation in the conferences is also required (as noted above) to receive credit for the course. Each unexcused conference absence will result in a letter grade reduction (A to A-, B+ to B, etc.).

NS2 Schedule of Lectures, Conferences and Exams **Spring 2017**

Date	Lec/Conf	Location	Topic (faculty leaders)
Jan 24	Lec	Meyer 815	Retina (Shapley)
Jan 26	Lec	Meyer 760	Functional architecture of the LGN & V1 cortex (Hawken)
Jan 31	Lec	Meyer 815	Cortical circuits, cell types and connections (Hawken)
Feb 2	Lec	Meyer 760	V1 functional characteristics, theory & computation (Movshon)
Feb 7	Lec	Meyer 815	Extrastriate visual cortex: organization (Movshon)
Feb 9	Lec	Meyer 815	Extrastriate visual cortex: dorsal pathway (Movshon)
Feb 10	*Conf (10-Noon)*	*Meyer 815*	*(Movshon)*
	Conf (1:30-3:30)	*Meyer 815*	*(Hawken)*
Feb 14	Lec	Meyer 815	Extrastriate visual cortex: ventral pathway (Movshon)
Feb 16	Lec	Meyer 815	Development of visual cortex (Movshon)
Feb 16	Lec (3:00-5:00)	Alexandria 901	Audition: periphery (Froemke)
Feb 21	Lec	Meyer 815	Perceptual decision-making (Kiani)
Feb 21	Lec (3:00-5:00)	Alexandria 901	Audition: central (Froemke)
Mar 2	Lec	Meyer 815	Theories of encoding of sensory information (Simoncelli)
Mar 7	Lec	Meyer 815	Theories of decoding of sensory information (Simoncelli)
Mar 10	*Conf (10-Noon)*	*Meyer 815*	*(Simoncelli) Group A*
	Conf (1:30-3:30)	*Meyer 815*	*(Shapley) Group B*
Mar 13 – 19	Spring Recess		
Mar 10	**Midterm exam given**		
Mar 17	**Midterm exam due**		
Mar 21	Lec	Alexandria 901	Chemical senses: central (Rinberg)
Mar 23	Lec	Alexandria 901	Somatosensation: periphery (Gardner)
Mar 23	Lec (3:00-5:00)	Alexandria 901	Chemical senses: periphery (Rinberg)
Mar 28	Lec	Alexandria 901	Somatosensation: central (Gardner)
Mar 30	Lec	Alexandria 901	Pain and temperature sense (Gardner)
Mar 31	*Conf (10-Noon)*	*Alexandria 901*	*(Rinberg) Group A*
	Conf (1:30-3:30)	*Alexandria 901*	*(Ringstad) Group B*
Apr 4	SoM Neuroscience Retreat		
Apr 6	Lec	Alexandria 901	Muscles, motor neurons & motor pools (Lang)
Apr 11	Lec	Alexandria 901	Reflexes I: Sherrington reflexes & CPGs (Lang)
Apr 13	Lec	Alexandria 901	Reflexes II: posture & locomotion (Lang)
Apr 18	Lec	Meyer 815	Descending motor control, motor cortex (Kiani)
Apr 20	Lec	Meyer 815	Sensorimotor integration, posterior parietal cortex (Kiani)
Apr 21	*Conf (10-Noon)*	*Meyer 815*	*(Kiani)*
	Conf (1:30-3:30)	*Alexandria 901*	*(Long)*
Apr 25	Lec	Alexandria 901	Cerebellum (Llinas)
Apr 27	Lec	Meyer 815	Basal ganglia (Glimcher)
May 2	Lec	Meyer 815	Eye movements I: VOR & OKN (Glimcher)
May 4	Lec	Meyer 815	Eye movements II: saccades, pursuit, vergence (Glimcher)

May 5	*Conf (10-noon)*	*Alexandria 901*	*Group A (Lang)*
	Conf (1:30-3:30)	*Alexandria 901*	*Group B (Long)*

May 5 **Final exam given**
May 12 **Final exam due**

Students:

Group A:
Olesia Bilash
Yen-Chih Chen
Margot Elmaleh
Erin Glennon
Ellie Hozhabri
Jennifer Lee
Angela Licata
Owen Marshall
Long Ni
Carla Rodriguez
Peiyuan Zhang

Group B:
Billy Broderick
David Collins
Pierre-Etienne Fiquet
Caroline Haimerl
Michael Jigo
Zhiwei Li
Naomi Lopez
Kathryn McClain
Pam Osborn Popp
Vaishali Talwar
Xiaoyue Zhu