PRINCIPLES OF NEUROSCIENCE 2020

INP 701a
Course directors: Angeliki Louvi, Will Cafferty, Alex Kwan
TAs: Sofia Massaro Tieze, Abby Greene, Shanna Murray

Sep 2, Wed 4:00 – 5:30 (intro): Zoom link
Tue 3:00 – 4:30 (discussion): Zoom link – check Slack
Fri 3:00 – 4:30 (lecture): Zoom link – check Slack

Slack: principlesofn-ac09849.slack.com

Website: https://inp701a-2020.neocities.org/index.html

DATE	**TOPIC**	**SPEAKER**
Sep 2 Wed (*4 – 5:30pm*)	Course introduction, life as scientists	Angeliki Louvi, Will Cafferty, Alex Kwan
Sep 4 and 8	Molecular basis of behaviors underlying addiction	Marina Picciotto
Sep 11 and 15	The neuronal cytoskeleton and axonal transport in health and disease	Shaul Yogev
Sep 18 and 22	Neurobiology of social cognition	Steve Chang
Sep 25 and 29	Chemoreception in the fly	John Carlson
Oct 2 and 6	Value-based decision-making	Ifat Levy
Oct 9 and 13	Inhibition and excitation in cortical circuits	Jess Cardin
Oct 16 and 20	Homeostatic plasticity and synaptic scaling	Susumu Tomita
Oct 23 and 27	Break	
Oct 30 and Nov 3	Repeat expansion diseases	Junjie Guo
Nov 6 and 10	Neurodegeneration	Sreeganga Chandra
Nov 13 and 17	Visual processing in the vertebrate retina	Jimmy Zhou
Nov 20 and Dec 1 Nov 23-29: Thanksgiving	Genetics of autism spectrum disorders	Ellen Hoffman
Dec 4 and Dec 8	Principles of feeding control	Marcelo Dietrich

Overview: This is a graduate seminar course with lectures, readings, and discussion of selected topics in neuroscience. Emphasis will be on how approaches at the molecular, cellular, physiological, and organismal levels can lead to understanding of neuronal and brain function.

Lectures (Fridays)

- Attendance is mandatory (please let us know in advance if you will not able to attend)
- Video camera may be turned off
- Quick questions can be asked via chat on Zoom. The chat log will be saved and made available. For more in-depth questions, we will ask the lecturer to pause every ~20 minutes to answer

- At the end of lecture, we will ask for 3 volunteers (one per group) to lead the discussion on Tuesday
- After the lecture, the invited speaker, instructors, and TAs will try to stay on Zoom for any question, if possible.
- Slides will be made available after the lecture, contingent on the speaker's permission

Essays (due on Tuesdays by 3 PM – i.e. *before* class, submit on Slack)

- Two double-spaced pages, 12 pt. Times New Roman font or equivalent, 1" margins
- Focusing on the contemporary paper:
    - Provide a critique of one or two aspects of the study (e.g., weaker points and how these could be addressed, new questions arising from current study, and follow-up experiments needed to answer said questions)
    - Do not regurgitate and summarize the findings of the paper! Avoid methodological details! Instead, focus on question asked, experimental design, expected outcomes, interpretations
    - See the website for further suggestions and sample essays

Discussion (Tuesdays)

- Attendance is mandatory (please let us know in advance if you will not able to attend)
- Video camera should be turned on
- Class will be divided into 3 groups (breakout rooms), each with 1 course co-director, 1 TA, and 1 expert (the invited speaker or a trainee in their lab)
- Discussion leader will facilitate a conversation about 2 papers: one historical and one contemporary (selected by the week's invited speaker):
    - What is the question that each study addresses?
    - How this question fits within the larger context and state of the research area?
    - What is the methodology used?
    - What are the critical findings and do the data support the conclusions?

Essay rewrites (**due on December 17th by 10 AM, submit on Slack)**

- Rewrite all of the essays from every week
- Revised essays can be simple or extensive, depending on the initial feedback

Grading: There are two components that go towards the final grade: participation (attendance, questions in lectures and discussions each week), and essay rewrites (quality and effort in the context of the initial submission). In terms of grade distribution, for last year, 36% of the class received H, and the rest of the class received HP or P.