2020 COURSE SYLLABUS: BIPN 144 (4 units)

This syllabus is subject to change, particularly because of campus efforts to contain covid-19. Any schedule changes will be posted on Canvas. Make sure to frequently check the website to keep updated.

Please make sure that you check out this website for resources on how to learn remotely: https://digitallearning.ucsd.edu/learners/learning-remote.html

All lectures will be recorded and posted on Canvas the next day. All exams will be online.

I understand this is a challenging time and that you may have challenges with accessing the course material, adapting to online-only learning, and taking online quizzes and exams. My goals are to teach you the course material, fairly test your knowledge of this material, and grade you accordingly, while keeping these challenges in mind.

Given the current disruption, the campus will try to give greater flexibility to change the choice of letter grades, P/NP, or S/U. The instructor is being asked to keep records of the actual letter grades. Thus, a student who opts for P/NP can later decide to change this to a letter grade, if he/she does this in a timely manner. Currently, you are allowed to make this change up to the end of week 10.

Students requesting accommodations and services due to a disability for this course need to provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD), prior to eligibility for requests. Receipt of AFAs in advance is necessary for appropriate planning for the provision of reasonable accommodations. Please note that instructors are unable to provide accommodations unless they are first authorized by OSD. For more information, contact the OSD at (858) 534-4382 (voice), osd@ucsd.edu, or visit osd.ucsd.edu."

Students are expected to do their own work, as outlined in the UCSD Policy on Academic Integrity. Academic misconduct is broadly defined as any prohibited and dishonest means to receive course credit, a higher grade, or avoid a lower grade. Academic misconduct misrepresents your knowledge and abilities, which undermines the instructor's ability to determine how well you're doing in the course. Please do not risk your future by cheating.

Title: Development of the Nervous System

This course will cover what is already known about how nerve system develops and, more importantly, principles and concepts of developmental neuroscience. Students will acquire developmental perspective of brain function and behavior. Attention will be on the key research that lead to these major discoveries. Instructor will point out remaining big questions and new technologies to stimulate students' interest in basic science research to solve these fundamental questions.

The instructor taught Dev Neuro for approximately 20 years at undergrad and grad level and have done research in this area for 25 years and witnessed rapid progress in this area. There is a lot to be learned from developmental neurobiology and applied to other areas of neuroscience (knowledge, methods and way of thinking) and understanding of disease diagnosis and treatment (disease biology and therapeutic targets). Autism, schizophrenia, intellectual disability and epilepsy all have developmental roots. However, this course will not cover much details of these diseases in the interest of time. The instructor teaches in BIPN150 Nervous System Diseases in the Winter quarters, which is dedicated to the diseases of the nervous system.

Prerequisites: No prerequisites but highly recommend that you have taken BIBC 102 and BICD 100; BIPN 140 may be taken concurrently.

Classroom locations/dates/times

Section A00 – Lectures Tuesday and Thursdays 8:00a-9:20a – ZOOM

A01	F	10:00a-10:50a	Khoa Huu Huynh
A02	W	5:00p-5:50p	Ankitha Kaki
A03	W	7:00p-7:50p	Sagar Mehta
A04	F	12:00p-12:50p	Aashka Mehta
A05	F	11:00a-11:50a	Khoa Huu Huynh
A06	F	1:00p-1:50p	Aashka Mehta

Text books/reading material:

Main textbook: Development of the Nervous System (Sanes)
Optional: Principles of Neurobiology (Liqun Luo)

Grade:

30% Midterm 1
35% Midterm 2
35% Final

Grading and Definitions
Do **not** expect to be graded solely in comparison to your classmates (i.e. a curve).

A: Honor grade indicating excellence. Earned as a result of a combination of superior examination scores and ability to deal resourcefully with abstract ideas. This grade reflects highly probable success in a field relating to neurobiology or probable continued success in sequential courses.

B: Honor grade indicating competence. Earned as a result of a combination of high examination scores and commendable mastery of pertinent skills. This grade reflects probable success in a field relating to neurobiology or probable continued success in sequential courses.

C: Standard grade indicating successful performance earned as a result of a combination of satisfactory examination scores, and fair ability to deal with abstract ideas. This grade reflects sufficient evidence of ability to warrant entering sequential courses.

D: Substandard grade indicating the student has met only minimum requirements and is usually associated with low examination scores, a poor ability to grasp abstract ideas, and/or poor class participation.

F: Non-passing grade indicating failure to meet minimum requirements for exams and participation.

Review Sessions:

Wednesdays and Fridays.

All students **MUST** attend one study session per week.

Course Instructors:

Yimin Zou (yzou@ucsd.edu, 534-7212)

Yimin Zou Office Hour: 4 pm – 5 pm Thursdays, 1224A Pacific Hall

IA Office Hours:

Khoa Huu Huynh, khh006@ucsd.edu	10 am – 11 am Monday
Aashka Mehta, aamehta@ucsd.edu	10 am – 11 am Friday
Ankitha Kaki, akaki@ucsd.edu	1am – 12 pm Monday
Sagar Mehta, samehta@ucsd.edu	12 pm – 1:00 pm Tuesday

General Information:
Reading the assigned material before the class is held will help you follow the lecture.

Attendance at classes AND 1 IA session per week is your best way of ensuring you get a good grade.

If you miss a lecture arrange to get the class notes from another student – this is not the responsibility of the instructors or IA.

If you cannot attend one of the IA sessions and/or the midterm and final exams it is recommended you drop the course because your grade will likely be affected.

If an emergency arises and you cannot take the midterm or final exam, the score of the missing exam can be replaced by the better of the other exams. The makeup may also be an oral examination of the material or a term paper at the discretion of the instructor.

Key dates during spring quarter 2020
Spring Quarter begins Wednesday, March 25
César Chávez Holiday, Friday, March 27
Instruction begins Monday, March 30
Memorial Day observance Monday, May 25
Instruction ends Friday, June 5
Final Exams Saturday – Friday, June 6-12
Spring Quarter ends Friday, June 1

Lecture 1 (Tuesday March 31): Technology for online teaching and study: Zoom and Canvas

Lecture 2 (Thursday April 2): Technology for review, office hours and exams

Lecture 3 (Tuesday April 7): Neural induction 1: Nervous system induction during embryogenesis (Chapter 1)

Lecture 4 (Thursday April 9): Neural induction 2: Molecular mechanisms (Chapter 1)

Lecture 5 (Tuesday April 14): Patterning 1: Principles of pattern formation (Chapter 2)

Review Lecture 1 (Thursday April 16):

Midterm 1 (Tuesday April 21)

Lecture 6 (Thursday April 23): Patterning 2: Organizing centers and morphogens (Chapter 2)

Lecture 7 (Tuesday April 28): Neurogenesis: polarity and asymmetric cell division (Chapter 3)

Lecture 8 (Thursday April 30): Neuronal migration: cytoarchitecture, brain anatomy and cytoskeleton dynamics (Chapter 3)

Lecture 9 (Tuesday May 5): Axon guidance: pathfinding and brain wiring diagrams (Chapter 5)

Lecture 10 (Thursday May 7): Axon guidance: targeting and specificity of connectivity (Chapter 6)

Review Lecture 2 (Tuesday May 12):

Midterm 2 (Thursday May 14) (not cumulative)

Lecture 11 (Tuesday May 19): Synapse formation: neuromuscular junction (Chapter 8)

Lecture 12 (Thursday May 21): Synapse formation: central synapses (Chapter 8)

Lecture 13 (Tuesday May 26): Synapse maturation and plasticity (Chapter 9)

Lecture 14 (Thursday day May 28): Cell types: diversity of excitatory neurons and inhibitory neurons (Chapter 4)

Lecture 15 (Tuesday June 2): Emergence and maturation of behavior: role of neural activity and experience (Chapter 10)

Review Lecture 3 (Thursday June 4)

Tuesday Final (Thursday June 11) (not cumulative)