2022 COURSE SYLLABUS: BIPN 144 (4 units)

All lectures will be in-person but recorded and posted on Canvas. All exams will be online.

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 also 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 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 9:30a-10:50a TATA 3201

80088	DI	A01	M	8:00a-8:50a	CENTR	207	Yukta Chidanandan
80089	DI	A02	M	9:00a-9:50a	CENTR	207	Dongsheng (Tommy) Wang
80090	DI	A03	M	10:00a-10:50a	CENTR	207	Dongsheng (Tommy) Wang
80091	DI	A04	M	11:00a-11:50a	CENTR	207	Nidhi Checka

Text books/reading material:
Main textbook: Development of the Nervous System (Sanes)
Optional: Principles of Neurobiology (Liqun Luo)

Grade:
Three non-accumulative exams will be given and the overall score and grade will be determined by the average of the two better scores. The lowest score will be dropped.

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:

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: Library cubicles

Yukta Chidanandan	3-4 pm Wednesday (Cubicle 5)
Dongsheng (Tommy) Wang	4-5pm Wednesday (Cubicle 3)
Nidhi Checka	3-4 pm Friday (Cubicle 5)

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 2021
Spring Quarter begins Wednesday, March 23
César Chávez Holiday, Friday, March 25
Instruction begins Monday, March 28
Memorial Day observance Monday, May 30
Instruction ends Friday, June 3
Final Exams Saturday – Friday, June 4-10
Spring Quarter ends Friday, June 10

Lecture 1 (Tuesday March 29): Neural induction 1: Nervous system induction during embryogenesis (Chapter 1)

Lecture 2 (Thursday March 31): Neural induction 2: Molecular mechanisms (Chapter 1)

Lecture 3 (Tuesday April 5): Patterning 1: Principles of pattern formation (Chapter 2)

Lecture 4 (Thursday April 7): Patterning 2: Organizing centers and morphogens (Chapter 2)

Lecture 5 (Tuesday April 12): Neurogenesis, gliogenesis and migration 1 : Cell division and differentiation (Chapter 3)

Review Lecture 1 (Thursday April 14)

Exam 1 (Tuesday April 19)

Lecture 6 (Thursday April 21): Neurogenesis, gliogenesis and migration 2 : Histogenesis (Chapter 3)

Lecture 7 (Tuesday April 26): Cell types: diversity of excitatory neurons and inhibitory neurons (Chapter 4)

Lecture 8 (Thursday April 28): Axon guidance 1: Pathfinding (Chapter 5)

Lecture 9 (Tuesday May 3): Axon guidance 2: Cell biological and Signaling Mechanisms of the Growth Cone (Chapter 5)

Lecture 10 (Thursday May 5): Axon guidance 3: targeting (Chapter 6)

Review Lecture 2 (Tuesday May 10)

Exam 2 (Thursday May 12) (not cumulative)

Lecture 11 (Tuesday May 17): Synapse formation 1 (Chapter 8)

Lecture 12 (Thursday May 19): Synapse formation 2 (Chapter 8)

Lecture 13 (Tuesday May 24): Refinement of synaptic connections 1 (Chapter 9)

Lecture 14 (Thursday May 26): Refinement of synaptic connections 2 (Chapter 9)

Lecture 15 (Tuesday May 31): Emergence and maturation of behavior: role of neural activity and experience (Chapter 10)

Review Lecture 3 (Thursday June 2)

Exam 3 (Final) (Tuesday June 7) (not cumulative)