

NEURL-UA 305 (Undergraduate course ID)

## **Development & Dysfunction of the Nervous System**

**SPRING 2017**

*(revised 15 February 2017)*

### **Faculty**

Dan Sanes  
1009 Meyer  
212-998-3924  
[dhs1@nyu.edu](mailto:dhs1@nyu.edu)

### **Teaching Assistant**

Melissa Caras  
1007 Meyer  
212-998-3577  
[mc4999@nyu.edu](mailto:mc4999@nyu.edu)

Office hours: after class or by appointment

Office hours: after class or by appointment

### **Schedule**

Lecture & Recitation    Thursday  
   1:30 - 4:00 p.m.  
   Meyer 815

### **Readings**

Assigned:

- (1) *Development of the Nervous System, Third Edition* (Academic Press, 2012)  
    DH Sanes, TA Reh, WA Harris
- (2) *PDF files of primary research and review articles will be posted on NYU Classes*

Supplemental:

- (1) *Developmental Biology, Ninth Edition* (2010) Sinauer Associates, Gilbert SF
- (2) *Neurobiology of Disease* (2007) Elsevier Academic Press, Gilman S
- (3) *Diseases of the Nervous System in Childhood* (1992) Mac Keith Press, Aicardi A

### **Journal Club**

During journal club, Melissa will lead a group discussion about a research article on the same topic as the week's lecture. Students are expected to carefully read each article in advance, and be prepared to actively participate in the discussion. Students will be called on to critically evaluate any and all aspects of the article, including scientific motivation, research methodology, results, and interpretations.

### **Midterm Exam**

The midterm exam will be comprised of short-answer and short essay questions. The midterm exam will be a take-home exam, available on NYU Classes March 9 immediately after class. The completed exam is due by 5:00 p.m. on March 14. Students may **NOT** discuss the exam with one another or work together on the midterm exam.

**Term Paper** (For complete information, please refer to the “Term Paper” description)

The purpose of the term paper is to learn how to read and evaluate primary research. The term paper will critically evaluate 2 primary research articles that address one \*hypothesis\* related to a developmental disorder of the nervous system.

Students may discuss their paper topic with one another, but may **NOT** work together when writing any portion of the term paper outline or text.

### **Student Lecture on Term Paper Topic**

Each student will deliver a presentation on the developmental disorder that was covered in the term paper. The presentation should include a description of the human condition (phenotype, etiology, prevalence), and research conducted with one animal model. The presentation should be in PowerPoint (or PDF or Keynote) format, and must not exceed 20 minutes. Questions will be encouraged and accepted throughout the presentation. You will be able to submit a preliminary version of your presentation and get feedback from Dan and Melissa.

Students may **NOT** work together when preparing their lectures, but may deliver the lectures to one another for feedback on the format.

### **Grading**

The final grade will be determined from your performance on the following assignments:

20%	Class & Journal Club participation
25%	Midterm Exam
30%	Term Paper
25%	Student Lecture

Extra credit assignments are not available. Extensions are granted for documented health issues or personal emergencies.

### **Summary of Important Due Dates:**

Feb 9	Term paper topic & 2 references
Feb 16	Term paper outline
Feb 23	First paragraph of term paper
Mar 9	Term paper
Mar 14	Midterm
1 week before scheduled	Preliminary PPT of Lecture Lecture

### **Attendance**

Attendance is compulsory. If you miss a class without a legitimate excuse, then the highest grade that you can obtain for the course is a B+. If you miss two classes without a legitimate excuse, then the highest grade that you can obtain for the course is a B. And so forth.

## SCHEDULE OF LECTURES & RECITATIONS

DATE	TOPIC	READINGS
<b>Nervous System Development</b>		
Jan 26	<b>Lecture: Behavioral development</b>	Chapter 10: pgs 302-325
	Journal Club: London and Clayton (2008)	PDF files at NYU Classes
	Recitation: Choosing a topic for term paper and lecture Scheduling student lectures	(both main text and supplementary text)
Feb 2	<b>Lecture: Early Development of the CNS: Birth &amp; Migration</b>	Chapter 3: pgs 49-66
	Journal Club: La Torre, Georgi and Reh (2013)	PDF file at NYU Classes
	Recitation: Selecting references for term paper and lecture	
Feb 9	<del>Lecture: Growth Cones &amp; Pathfinding</del>	<del>Chapter 5</del>
	<del>Journal Club: Nornes and Das (1972)</del>	<del>PDF file at NYU Classes</del>
	<del>Recitation: Drafting term paper outline</del>	
Feb 16	<b>Lecture: Growth Cones &amp; Pathfinding</b>	Chapter 5
	Journal Club: Nornes and Das (1972)	PDF file at NYU Classes
	Recitation: Writing your term paper (first paragraph)	
Feb 23	<b>Lecture: Naturally Occurring Cell Death (Melissa Caras)</b>	Chapter 7
	Journal Club: Thompson and Brenowitz (2008)	PDF file at NYU Classes
Mar 2	<b>Lecture: Synapse Formation</b>	Chapter 8
	Journal Club: Miyamoto et al. (2016)	PDF files at NYU Classes
	Recitation: Peer-to-peer editing of term paper	(both main text and supplementary text)
TBD	<b>Lecture: Target Recognition &amp; Topographic Maps</b>	Chapter 6
	Journal Club: Walthall and Murphey (1984)	PDF file at NYU Classes
Mar 9	<b>Lecture: Plasticity</b>	Chapter 9
	Journal Club: Wiesel and Hubel (1963)	PDF file at NYU Classes
	Recitation: Preparing your student lecture	
	Take home exam available online Due by 5 p.m. on March 14	PDF file at NYU Classes
(Spring Break: March 11 - 19)		
<b>Developmental Disorders</b>		

Mar 23	<b>Lecture: Cerebral Palsy</b>	PDF files at NYU Classes
	<a href="#">Recitation: Student Lectures</a>	
Mar 30	<b>Lecture: Fetal alcohol syndrome</b>	PDF files at NYU Classes
	<a href="#">Recitation: Student Lectures</a>	
Apr 6	<b>Lecture: Traumatic Brain Injury &amp; Axon Regeneration</b>	PDF files at NYU Classes
	<a href="#">Recitation: Student Lectures</a>	
Apr 13	<b>Lecture: Attention Deficit Hyperactivity Disorder</b>	PDF files at NYU Classes
	<a href="#">Recitation: Student Lectures</a>	
Apr 20	<b>Lecture: Autism</b>	PDF files at NYU Classes
	<a href="#">Recitation: Student Lectures</a>	
Apr 27	<b>Lecture: Schizophrenia</b>	PDF files at NYU Classes
	<a href="#">Recitation: Student Lectures</a>	
May 4	<b>Lecture: Developmental Hearing Loss</b>	PDF files at NYU Classes
	<a href="#">Recitation: Student Lectures</a>	
Final Exam Week: May 10 - 16		
<b>NO FINAL EXAM</b>		