BIBB350 Developmental Neurobiology, Fall 2013
T, Th 10:30am – 12pm
McNeil Building, Room 110

Instructor: Dr. Julie McGurk
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Office Hours: Mondays 2:30 - 3:30pm

Prerequisites: BIBB109

Course Description:
This course will focus on cellular and molecular mechanisms of the organogenesis of the central nervous system. We will begin by examining how tissue in early development is induced to take a neuronal lineage. We will then build to understand how neural stem cells generate the different cells of the nervous system, how they migrate to their correct locations, how axons find their correct targets, and how functional synapses are established. In the last part of the course we will focus on ways in which basic neurodevelopmental research can inform our understanding of various disorders.

Course Goals:
- Become familiar with various model organisms used in developmental research
- Learn about various methods of studying developmental processes and how to interpret resulting data
- Learn how to communicate scientific concepts to a lay audience as well as to others in the scientific community

Canvas: http://upenn.instructure.com
This site will have all readings and short videos posted in weekly modules. These modules will also have quizzes, which will test your comprehension of the readings and videos. These are all intended to prepare you for the in-class activities, which will ask you to apply the out-of-class content to different contexts as well as integrate the information with new course content.

Students with Disabilities:
Students with a documented disability from Student Disability Services will receive all recommended accommodations.

Academic Integrity:
I expect you to act with academic integrity in accordance with the University of Pennsylvania's Code of Academic Integrity, which defines academic dishonesty as "activities that have the effect or intention of interfering with education, pursuit of knowledge, or fair evaluation of a student's performance". For examples see: http://provost.upenn.edu/policies/pennbook/2013/02/13/code-of-academic-integrity
Any act of academic dishonesty will be reported to the Office of Student Conduct.

How to do well in this course:
Take notes on videos, on readings, and during class
Attend class and participate
Come to office hours

Tentative Course Calendar:

Date	Topic	Assignment
August 29th	Course Overview and Early Development	
Sept. 3rd	Assignment 1 Overview and Paper	
Sept. 5th	Neural Induction and Neurulation	
Sept. 10th	Polarity and Segmentation	
Sept. 12th	Genesis, Migration, and Differentiation	
Sept. 17th	Axon Growth and Guidance	
Sept. 19th	Target Selection	
Sept. 24th	**Exam I**	
Sept. 26th	Naturally Occurring Neuron Death	
Oct. 1st	Synapse Formation and Refinement	
Oct. 3rd	Project Planning	
Oct. 8th	Critical Periods	**Rough Drafts Due by 5pm**
Oct. 10th	**FALL BREAK**	
Oct. 15th	Project Planning	
Oct. 17th	Behavioral Development	
Oct. 21st		**Project Due by 5pm**
Oct. 22nd	Visit Planning	
Oct. 24th	Adult Neurogenesis	
Oct. 29th	HS Visit	
Oct. 31st	HS Visit	
Nov. 5th	**Exam II**	
Nov. 7th	Primary Literature Searches	
Nov. 12th	Writing a Mini-Review Paper	
Nov. 14th	Autism	
Nov. 19th	Adult Neurogenesis and Individual Variability	Meet with Dr. McGurk
Nov. 21st	Depression	Sometime this week!
Nov. 26th	Depression	
Nov. 28th	**THANKSGIVING**	
Dec. 3rd	Schizophrenia	
Dec. 5th	Schizophrenia	
Dec. 10th	Down Syndrome	**Final Paper Due**

Other dates to note: Oct. 4th Drop Deadline
Nov. 8th Withdraw Deadline

Grading:

There will be 2 exams (Sept. 24th and Nov. 5th) during the semester in addition to an assignment to create a lesson plan for a high school AP Biology class and a final mini-review paper. For each day the class meets there will be pre-work (videos and readings) that must be done as well as a quiz on that material, which will provide feedback on your understanding of the material in preparation for class time. In addition, there will be in-class work that you will need to hand-in.

Exams	**50%**
Quizzes	**5%**
Assignment	**15%**
In-Class Work	**5%**
Final Paper	**25%**

Assignment:

You will create a lesson plan for a high school AP Biology class. To do this, you will write a description of an in-class or out-of-class activity, write the background material for needed for teachers to use the activity in their classes, and provide additional resources for students (articles, videos, etc). To help you with this, you will brainstorm and refine your ideas for the in-class activity in a group. You will also get feedback on a rough draft from me and your group members. After everyone hands in their final assignments, as a class we will figure out which activities we can use to teach an actual AP Biology class at Bodine High School. Going to the high school is optional for those that are interested. The purpose of this project is to help solidify concepts from the first portion of the course and to learn how to communicate scientific concepts to a relatively lay audience.

Final Paper:

We will spend the final portion of the course focused on understanding neurological/mental disorders through development, as well as working on the ability to read scientific literature and understand experimental design. You will bring these skills together in this mini-review of an article of your choosing that describes a developmental process that contributes to a neurological/mental disorder.

Attendance and Other Class Policies:

- Although attendance is not mandatory per se, each class will have some work that will be handed in. If you miss a class, you are responsible for making up that in-class work within a week of your return.
- Cell phones should not be used or audible during class as a courtesy to everyone in the class. If you must use your phone for an emergency reason, please leave the classroom while talking or texting.
- Computers should only be used for class purposes, again as a gesture of common courtesy.
- Late assignments will be deducted 10% per day
- If you need to miss an exam for a legitimate reason (e.g., religious holiday) please let me know within the first week of class or as soon as you know about a conflict. You will need to schedule a make-up exam *before the scheduled exam day*. Exams missed unexpectedly will be considered for make-up on a case by case basis and will otherwise result in a zero. All make-up exams will be different but approximately equivalent to the exam the rest of the class takes.