Course Overview:
The goal of this course is to provide you with a health context for the basic cellular and molecular biology you acquired in previous courses. Over the course of the semester we will survey a number of diseases that target nervous tissue or result in abnormal behavior. We will examine each disease from several different perspectives. Including but not necessarily limited to the following:
- Etiology
- Epidemiology
- Economic burden/cost of the disease
- Social burden
- Health disparities
- Diagnostic tools
- Neuropathology
- Biological basis of the diseases
- Treatment strategies

This semester we will focus on the contributions genetic epidemiology to our understanding of neurodiseases. We assume that diseases and mental disorders result from the complex interplay of genes with environmental factors. The field of genetic epidemiology has value beyond identifying the genes involved in complex diseases but is also a valuable tool in basic biology. The basic approach used by genetic epidemiologist, is similar to that used by scientist that use genetic models. Both attempt to find the genetic basis of a trait or phenotype. Instead of analyzing a set of random mutations, genetic epidemiologist use a collection of sophisticated genomic tools in an effort to identify key disease related genes.

Learning Outcome:
I had a number of objectives in mind in designing this course. First, I want to introduce the participants to the major issues in the area of developmental neuroscience. To help you appreciate the range of experimental techniques that are used in the effort to address these question. Finally, I think it is important for all of you to gain an appreciation of the historical and social context of the research presented in this course.
On completion of this subject, students should:
- students will learn how to critically read primary research papers and present these papers to the class;
- appreciate the biological processes that define disease;
- have gained some insights into the cellular and molecular basis of those processes
- understand how basic scientists can benefit from advances in understanding disease mechanisms and;
- be familiar with modern experimental approaches used to investigate the development of the nervous system and appreciate their strengths and limitations.
This subject will help students develop the following generic skills:

- critical analysis of scientific research papers;
- literature searching skills;
- oral presentations skills
- Writing in the major; and
- capacity for independent critical thought;
- and self-directed learning.

Readings:
All students enrolled in this course are required to prepare a 40 to 50 minute lecture. Below you will find a list of neurodiseases (potential lecture topics). Please review this list ahead of Wednesday’s class. Our goal for the first day, select partners, topics and presentation dates. I will be making the first 6 presentations. Use my lectures as a guide in terms of the different options you might want to consider for inclusion in your presentations.
You and your partner will work as a team to prepare our presentations. As you prepare your presentation I require that you meet with me on a regular basis. To help you get started I have put together a short reading list. With little or no background it is virtually impossible to prepare a 45-minute presentation in two or three days. The best presentations require that you spend time reviewing the literature, meeting with your partner to not only identify topics but to develop an overall strategy to create two complimentary presentations. Remember the goals is not only to work with your partner to decide what you will say, you also must think about how you will say it.

Term Paper:
All students are expected to write a 10 to 12 page term paper, which is due no later than December 11. The general topic of your term paper will be the same as your oral presentation. However, you are required to switch the focus of your term to the topic(s) covered by your partner in her oral presentation.

Discussant Reports:
You are required to serve as a discussant twice during the semester. You will write a short summary (~ 1 page) based on the assigned readings. Your report should include two or three questions you would like the presenters to answer. The goal of this exercise is to help the presenters refine their presentations and to identify material in the readings that might present a challenge to their audience.

Your Grade:
Your grade in this course will be based on your oral presentation (35%), term paper (35%), discussant reports (10%) and Team Spirit (20%). I will assign points for team spirit based on the quality of your interactions with your presentation partner and your level of class participation.