Cognitive neuroscience is the study of how the brain enables the mind. It is a relatively new field (since the 1970’s, when the term was coined by M. Gazzaniga), and as Gazzaniga says, it is a tricky business. This course embodies the two basic approaches that scientists take to answer the question, how does the brain (wet stuff) enable the mind (mental stuff)?

The first approach is the study of neurons, the neural environment, glial cells, and responses (like immunological and inflammatory reactions), brain structures, and neural function. The assumption is that a low-level account of how all cells in the brain, brain structures, and neurochemicals are modified by experience is in fact where the "mind" is. In other words, the mind is not in a singular place in the brain, but is represented through intact connections via neural pathways and cellular interactions, whereby a change in the current state of chemicals and firing patterns induces an idea, perception, memory, or thought. This approach is accomplished through animal experiments, computer modeling of brain actions with mental actions, and tracking pathways involved in certain cognitive processes (like perception).

The second approach is called cognitive neuropsychology, and assumes that we can understand best how the mind is enabled by the brain by studying human patients with particular brain damaged sites to track where failures occur. The approach to this class is to balance neuroscientific and neuropsychological evidence, cognitive theory and cognitive demonstrations. There is heavy use of patient data (as reflected by cases presented in class, from Ramachandran's Phantoms in the Brain and by Martha Farah's Visual Agnosia).

Texts for this course include:

An assortment of readings will be included that capture important empirical findings in the area of cognitive neuroscience, generally, and that address these two levels and what each can contribute.

Your assignments to be evaluated in this course are:
• class participation, via questions submitted each week via Moodle dropbox [10%],
• an exam on neurons brain structures and visual processing [20%], scheduled on Tuesday, Oct 2, in class.
• an annotated bibliography of articles which will contribute to your paper [10%]. Due Tuesday, Oct 23, end of the day, in the psych offices.
• an oral presentation of your paper idea, which occurs during the last week of term [20%] occurring Tuesday, Nov 12 or Thursday, Nov 14 – sign up sheet will be available later.
• a project/paper due at the end of the term [40%] due on the day of the final exam for this class, dropped in the Moodle dropbox.

Please see me if you have special circumstances for taking the EXAM and we can arrange something.

Please do all readings before the class on which they are assigned. The course is heavily driven by questions and discussion and while I will provide mini-lectures at the beginning of each meeting to review technical material, a large chunk of each class will be devoted to discussing articles or cases, brainstorming about how the brain works, and deriving experiments that would answer particular questions.

Religious observances
If you have a religious observance that conflicts with your participation in this course, let me know by the end of the second week of term (Sept 21) to discuss appropriate accommodations.

E-tiquette
During our class meeting times, your cell phone should remain stowed away and laptops should only be used for course work.

Honor Policy
I expect all students to be truthful and to complete all course assignments including homework, tests and exams etc without assistance from any source. If you use ideas from others, including their data findings or their wording, you must acknowledge that you borrowed another person’s idea. Please seek help on proper citation format from me or the Student Academic Support programs. Also see http://apps.carleton.edu/campus/doc/honesty/ for additional information the academic honesty at Carleton.