

# Duke University Center for Cognitive Neuroscience (CCN)

## First Year Curriculum

### **First Semester**

*Cognitive Neuroscience I* (Cabeza, Purves and staff). A general introduction to the field, including the methodology used currently by cognitive neuroscientists, with workshops on anatomy and methodology (See syllabus below)

*Student Presentation Course* (Woldorff and staff). Course designed to insure that students hone their skills at scientific presentation. It entails a weekly lunchtime meeting at which each student will typically present one research update, practice talk, experiment proposal, or scientific article each semester.

*Training in Ethical Issues and Teaching Methods*. A discussion course in research ethics. Since students will not yet have a fixed departmental affiliation their first year, a more generic ethics training workshop will be preferable. Students will therefore take part in the ethics training currently required for all incoming Ph.D. graduate students in biomedical programs. This indoctrination involves a weekend retreat discussing the principles of academic integrity and research ethics at the Beaufort Marine Labs. Students are then required to continue their training over the next few years by attending at least three Responsible Conduct in Research Forums composed of an introductory lecture on a topic of concern (e.g., ethical issues in publishing) followed by small group discussions.

*First Laboratory Rotation*

### **Second Semester**

*Cognitive Neuroscience II* (Purves, Cabeza and staff). Ongoing introduction to the scope of cognitive neuroscience and its methodology (See syllabus below).

*Student Presentation Course* (Woldorff and staff). Ongoing from the first semester.

*Training in Ethical Issues and Teaching Methods*. Ongoing from the first semester.

Second Laboratory rotation

## Syllabus Graduate Seminar on Cognitive Neuroscience

Cognitive Neuroscience I            Fall Term            crosslisted: PSY 359s, PHIL 359s, NEUROBIO 349s  
 Cognitive Neuroscience II        Spring term        crosslisted: PSY 360s, PHIL 360s, NEUROBIO 350s

This intensive yearlong course will offer an introduction to the fundamental concepts and current research perspectives in cognitive neuroscience. All major areas of cognition will be covered, including attention, perception, memory, emotion, language, cognitive development and neural modeling. Brain anatomy, electrical brain recording methods, functional brain imaging and computer modeling will also be covered in a series of workshops integrated with the course.

**Instructors:** Core and affiliated CCN faculty

**Time and Place:** Mondays 1:00-4:00 pm, CCN Conference Room (B243 LSRC Bldg.)

**Grading:**

- 1) research papers (5 pages excl. ref., double spaced)
- 2) final exam (multiple-choice and short-answer questions)
- 3) workshop participation

**Texts:**

- 1) Gazzaniga, M. S., Ivry, R. B., & Mangun, G. R. (2001). *Cognitive Neuroscience: The Biology of the Mind* (2<sup>nd</sup> Ed.). New York: W. W. Norton.
- 2) Purves, D. et al. (2004) *Neuroscience* (3<sup>rd</sup> ed) Sunderland MA: Sinauer Associates

| Date  | #  | Lecturer          | Lectures (1:00-2:10 pm)              | Workshops (2:20-4:00 pm)                    | Paper due (submit to) |                 |
|-------|--|-------------------|--------------------------------------|---|-----------------------|-----------------|
| 8/23  | 1  | Cabeza            | I. Introduction: History and Methods |   |                       |                 |
| 8/30  | 2  | Purves            | Introduction: Org. of Nervous System | <u>Workshop I.</u> Brain Anatomy (Williams) |                       |                 |
| 9/6   | 3  | Purves            | Introduction: Brain's Input Systems  |   |                       |                 |
| 9/13  | 4  | Platt             | Introduction: Brain's Output Systems | <u>Workshop II.</u> Motor Behavior (Platt)  |                       |                 |
| 9/20  | 5  | Purves            | II. Perception: Overview             |   |                       |                 |
| 9/27  | 6  | Purves            | Perception: Vision                   | <u>Workshop III.</u> Psychophysics (Purves) |                       |                 |
| 10/4  | 7  | Purves            | Perception: Audition                 |   |                       |                 |
| 10/11 | <i>Fall Recess</i>                         |                   |                                      |   |                       |                 |
| 10/18 | 8  | Woldorff          | III. Attention: Overview             | <u>Workshop IV:</u> ERPs 1 (Woldorff)       | Perception (Purves)   |                 |
| 10/25 | <i>No class (Soc Neuroscience meeting)</i> |                   |                                      |   |                       |                 |
| 11/1  | 9  | Woldorff          | Attention: Perceptual                | <u>Workshop V:</u> ERPs 2 (Woldorff)        |                       |                 |
| 11/8  | 10   | Woldorff          | Attention: Executive                 |   |                       |                 |
| 11/15 | 11   | Cabeza            | IV. Memory: Overview, Working memory |   | Attention (Woldorff)  |                 |
| 11/22 | 12   | Cabeza            | Memory: Nondeclarative memory        | <u>Workshop VI:</u> fMRI 1 (Huettel)        |                       |                 |
| 11/29 | 13   | Cabeza            | Memory: Declarative memory           | <u>Workshop VII:</u> fMRI 2 (Huettel)       |                       |                 |
| 12/6  | 14   | <b>Final exam</b> |                                      |   |                       | Memory (Cabeza) |

| Spring Term Starts |                      |                   |  |   |                               |
|--------------------|----------------------|-------------------|--|---|-------------------------------|
| Date               | #                    | Lecturer          | Lectures (1:00-2:10 pm)                                  | Workshops (2:20-4:00 pm)  | Paper due (submit to)         |
| 1/12 (w)           | 15                   | LaBar             | V. Emotion: Overview                                     | Workshop VIII:<br>Neuropsychology (LaBar)                               |                               |
| 1/17               | <i>MLK Day</i>       |                   |  |   |                               |
| 1/24               | 16                   | LaBar             | Emotion: Memory Interactions                             |   |                               |
| 1/31               | 17                   | LaBar             | Emotion: Social Interactions                             | Workshop IX:<br>Psychophysiology (LaBar)                                |                               |
| 2/7                | 18                   | Purves            | VI. Language: Comprehension                              |   | Emotion<br>(LaBar)            |
| 2/14               | 19                   | Purves            | Language: Production                                     | Workshop X: Animal<br>communication (Platt)                             |                               |
| 2/21               | 20                   | Brannon           | VII. Development: Overview                               |   |                               |
| 2/28               | 21                   | Brannon           | Development: Objects and<br>Numbers                      | Workshop XI: Methods for<br>studying cognitive<br>development (Brannon) | Language<br>(Purves)          |
| 3/7                | 22                   | Brannon           | Development: Language and<br>Memory                      |   |                               |
| 3/14               | <i>Spring Recess</i> |                   |  |   |                               |
| 3/21               | 23                   | Huettel           | VIII. Executive functions: Behavioral<br>selection       |   | Development<br>(Brannon)      |
| 3/28               | 24                   | Huettel           | Executive functions: Decision<br>making                  |   |                               |
| 4/4                | 25                   | Fellous           | IX. Computer simulations of neural<br>networks: Theory   | Workshop XII: Computer<br>Modeling I (Fellous)                          |                               |
| 4/11               | 26                   | Fellous           | Computer simulations of neural<br>networks: Applications | Workshop XIII: Computer<br>Modeling II (Fellous)                        | Executive funct.<br>(Huettel) |
| 4/18               | 27                   | Güzeldere         | The Problem of Consciousness                             |   |                               |
| 4/25               | 28                   | <b>Final exam</b> |  |   |                               |

**Instructors' e-mails:**

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