Computational Neuroscience Summer Program: Introductory Course

May 31 – June 3, 2011

Instructors: Dr. Joshua Jacobs (joshua.jacobs@drexel.edu)

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Suggested texts: *Theoretical Neuroscience*, Dayan and Abbott

Principles of Neural Science, Kandel, Schwartz, and Jessell

Matlab for Neuroscientists, Wallisch *et al.*

Course overview: This intensive introductory course is intended to familiarize students with basic techniques in computational modeling and analysis of neural data using Matlab. Students may (and are encouraged to) work together on assignments, but each student will be expected to hand in their own work. Assignments will be reviewed, but no formal grades will be assigned.

Course Outline:

Orientation and ethics training	May 31 (AM)
Introduction to programming in Matlab	May 31 (PM)
Introduction to computational modeling	June 1 (AM)
Integrate-and-fire neuron model	June 1 (PM)
Hodgkin-Huxley neuron model	June 2 (AM)
Extensions of the Hodgkin-Huxley model	June 2 (PM)
Neural data processing techniques	June 3 (AM)
Open lab time	June 3 (PM)

Note: The above course outline is approximate and is subject to change pending students' needs and interests. Because of the brief duration of this course, we are only able to provide a small "taste" of the diverse and evolving field of computational neuroscience. Students seeking more in-depth coverage of computational neuroscience, including the topics discussed in this course, are encouraged to read the suggested texts.