

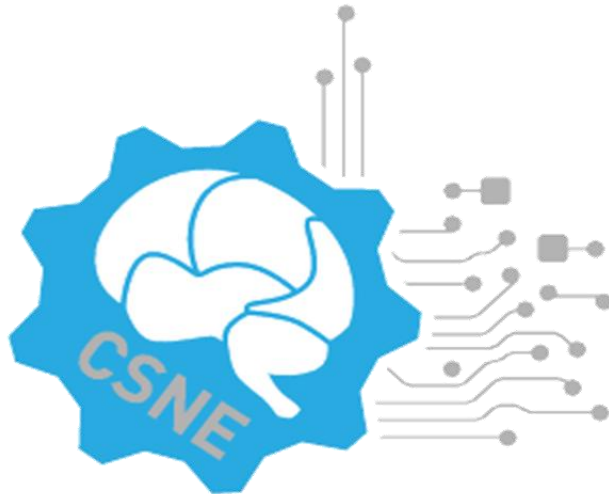
Center for Sensorimotor Neural Engineering

2013 Research Experience for Teachers

Neural Engineering Lessons and Resources

Created by:

- Michael Shaw (Cleveland High School, Seattle, WA)
- Shannon Jephson-Hernandez (Mill Creek Middle School, Kent, WA)



(4-5 Weeks)Project: Dateline Special Report on TBI

Entry Event: 1 Day Phineas Gage (4:23) & Tampering Rod Path (0:05) Videos with Entry Document

Pre-Assessment: Initial Thoughts Questions, Lesson 1

Guest Speakers: 1 Day (Schedule after TBI Lessons) Rich Shurtley

Researchers to Look For: Justin Williams (Bioengineering University of Wisconsin, Madison)
Mike Okun (Deep Brain Stimulation at University of FL, Gainesville)

Vocab Terms: “Neuro,” Neural Engineering, Cerebrum, Dura-Matter, Lobe, Cortex, Frontal, Parietal, Temporal, Cerebellum, Brain Stem, Amygdala. Neuron, Synapse, Soma, Dendrite, Axon, Myelin, Action Potential.

Lesson 1 1 day Intro to Nervous System

Lesson 2 1 day Macro Brain

Lesson 3A 1 day Neurons & Synapses: WebQuest

Lesson 3B 1 day Neurons & Synapses: Model

- Whole Class Neuron Model w/Ping Pong Ball
- Synapse/Neurotransmitter Activity w/ Vials
- Lab groups Make Models With Ziplock Bag of Recycled Materials

Lesson 3C 1 day Neurons & Synapses: Learning Activities

- Reach Out & Touch Someone From NSTA
- Neurotransmitter Relay

Lesson 4 1 day Reaction Time: Action Potential Lab **(SHAIN LAB KIT OPTION)**

Lesson 5A 1 day Networks & Systems

Lesson 5B 1 day Neuron Network

Lesson 5C 2 day Class Integrated Neuron Network Model (with TBI/Devices)

Lesson 6 4 day understanding TBI from Project Neuron (4 Days)

Lesson 7 1 day Script Writing Skills Workshop

Group Project: 2 days Dateline Special Report on TBI

Presentations: 1 day

Post Test: 1 day

Extensions/ Sub Options:

- Eyewire: Citizen Science Neuron Coloring **(HW/Filler/ Service learning)**
- Claim/Evidence/Reasoning: Article Bank **(HW/Research support)**

