

## Brain Science Educator Series

**Dates:** TBD

**Course Description:** In this course you will learn how to integrate brain science into your curriculum, innovate your lesson plans, and motivate your students using hands-on neuroscience exploration. Sessions will focus on exciting topics like brain damage and disease, memory, and the five senses with the underlying theme of learning tying the sessions together.

Using the online system Moodle, each session will allow participants to access video lectures from experts in the field, readings, and classroom-based investigations as well as participate in moderated discussions with fellow educators.

Participants must log on to Moodle three days per week and participate in all discussions and activities. By the end of the course, educators will have a toolkit of hands-on activities for all ages that they can implement in their own classroom.

**Goals:** To increase educators' comfort with neuroscience content.  
To explore hands-on teaching strategies.

### **Objectives:**

Participants will be able to access the technology and use the technology necessary for the course.

Participants will be able to list the basic parts of the brain and the functions of these parts.

Participants will be able to create one hands-on lesson plan to introduce students to the brain.

Participants will be able to identify the basic parts of a neuron.

Participants will be able to model how the brain processes visual information

Participants will be able to identify multiple activities that highlight the brain's role in visual processing.

Participants will be able to describe at least two brain disorders that affect vision.

Participants will participate in a real neuroscience study.

Participants will be able to describe how the brain creates, stores, and retrieves memories.

Participants will create hands-on strategies for improving memory.

Participants will be able to list brain disorders that affect memory and identify ways scientists treat these disorders.

Participants will describe the connection between memory and learning.

Participants will identify how different types of addictive substances affect the brain.

Participants will create a hands-on activity that informs students about how proper nutrition influences the brain.

Participants will identify resources that can be used to learn about the brain and strategies for teaching about the brain.

Participants will synthesize the course information into a lesson that can be used in the classroom.

Participants will present their brain science unit to the class.

Participants will share their reflections on teaching brain science and teaching brain science in a hands-on way.

## **Standards:**

### *Living Environment Standards*

Standard 1: Students will use mathematical analysis, scientific inquiry, and engineering design, as appropriate, to pose questions, seek answers, and develop solutions.

- 1.1 Elaborate on basic scientific and personal explanations of natural phenomena, and develop extended visual models and mathematical formulations to represent one's thinking.
- 1.2 Hone Ideas through reasoning, library research, and discussion with others, including experts.
- 1.3 Work toward reconciling competing explanations; clarify points of agreement and disagreement.
- 2.2 Refine research ideas through library investigations, including electronic information retrieval and reviews of the literature, and through peer feedback obtained from review and discussion.
- 3.1 Use various methods of representing and organizing observations (e.g. diagrams, tables, charts, graphs, equations, matrices) and insightfully interpret the organized data.

Standard 4: Students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science.

4.1 Living things are both similar to and different from each other and from nonliving things.

4.5 Organisms maintain a dynamic equilibrium that sustains life.

Standard 6.1: Through systems thinking, people can recognize the commonalities that exist among all system and how parts of a system interrelate and combine to perform specific functions.

Standard 6.2: Models are simplified representations of objects, structures, or systems used in analysis, explanation, interpretation, or design.

### *Health Standards*

Standard 1: Students will understand human growth and development and recognize the relationship between behaviors and healthy development. They will understand ways to promote brain and prevent disease and will demonstrate and practice positive health behaviors.

**About the Instructor:** Michaela Labriole has a B.S. in cognitive neuroscience from Brown University and an M.S. in environmental science from the SUNY College of Environmental Science and Forestry. During both her graduate and undergraduate studies, Michaela participated in courses with a large online component as both a student and a teaching assistant. She has spent the last three years working in the field of informal science education. Currently, she works as a Science Instructor at the New York Hall of Science where she recently moderated the online Dana Brain Science Educator Series.

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**Prerequisite Skills:** Participants must have Internet and email access. They must be able to post to Moodle and upload and download files.

**Software Requirements:** Participants must have the Microsoft Office suite.

**Determination of Recommendation for In-Service Credit:**

Recommendation for in-service credit will be based upon successful completion of the course and the specific outcomes for each component of the course.