

## **StART to STEAM Proposal for Spring 2014: The Neuroscience of Music**

**Applicants:** Jennifer Kelly, Associate Professor of Music  
Lisa Gabel, Associate Professor of Psychology, chair, Program in Neuroscience

### **Funding being sought for guest artists**

Lisa and I are requesting funding to support 3 guest artists for our course The Neuroscience of Music to be taught in spring 2014. The purpose of these guest artists are to provide expertise in their various fields: musician(s), Dalcroze Eurhythmics instructor, dancer. We anticipate each guest to receive \$500 for a total of \$1500 requested.

There are no prerequisites to take the course as we draw from across the campus. Students with backgrounds in music or neuroscience are encouraged to sign up for the course and share their specific disciplinary experiences with one another. After teaching this course once before in fall 2011, we learned the potential value in guest artists enlightening our students with the expertise of their honed crafts. Class highlights were experiential, hands on work with scientific experiment and music improvisation. Our intention for the spring 2014 class is for our students to develop a more nuanced view of the common intersection between music and neuroscience by watching, listening, and actually experiencing the synthesis.

The requested funding is based on student evaluations and our own self-evaluation of the course. It was clear that the hands-on activities were the most remembered, and the most successful. It was also clear that while Lisa and I did a fine job of explaining our individual disciplines, and while the students learned a great deal as evaluated through test scores and project content, we could be more effective teaching the synthesis of both disciplines. We recognize the challenge of intersecting a quantitative field with a qualitative field, and our experience has shown that every challenge was met with learning. We would like to capitalize on what we learned as teachers to better facilitate the learning of our students. These guest artists will actively present the synthesis of neuroscience and music by presenting their art. Through these presentations, Lisa and I will help the students explore, dissect, analyze, and experience the intersection of both fields.

### **Course Description for The Neuroscience of Music:**

An increasing amount of scientific research is indicating that the benefits of music training extend to the brain. For example, recent studies suggest that it boosts brain circuitry and increases certain cognitive functions. Further insights into how music training affects the brain may lead to new education methods and new ways to treat brain damage. In “The Neuroscience of Music” we will examine the connection between science and the arts. In this course you will work with students from a variety of disciplines and backgrounds to examine a problem from multiple perspectives. Music provides a tool to study numerous aspects of neuroscience, including motor-skills, learning, memory, and emotion. Neuroscience provides an outlet to study the power of music in humanity. This course would take a multi-disciplinary approach to

understanding neural systems governing music perception, performance, listening, and cognition.

**Guest Artist: Musician(s)**

While I demonstrate the art of music through the voice to our students, it is always helpful to bring in an outside expert. A duet of professional instrumentalists will facilitate discussion of music perception, non-verbal communication, anticipation, live energy, and the difference between collective patterns and art.

**Guest Artist: Dalcroze Eurhythmics**

In a hands-on classroom, students will have opportunity to connect music to the body, whether or not they have any prior music or movement experience. The opportunity to analyze the brain processes connecting listening to body and neural/muscle memory is a valuable experience to show synthesis of both.

Explanation of Concept

Dalcroze Eurhythmics is a process (and/or method) for awakening, developing, and refining innate musicality wherever it may be. The aim of Dalcroze Eurhythmics is to stimulate, develop, and refine all the capacities we use when we engage in music: our senses of hearing, sight and touch; our faculties of knowing and reasoning; our ability to feel and to act on our feelings. Coordinating these capacities is the kinesthetic sense and the feedback mechanism of the nervous system, which conveys information between the mind and the body. The education of this kinesthetic sense to the purposes of music is at the heart of the Dalcroze work.

**Guest Artist: Dancer**

After discussions of listening, music perception, movement, patterns, neural processes, brain mapping, *etc.*, we would like to design an experiment and/or analysis around the experience of dance. The students in the class, their interests, and affinities for varied topics will determine the nature of this analysis.

While these artists have not yet been specifically identified, it is less important that these artists be large names in the field (which allows for a realistic budget) and more important that these artists are working professionals.

Again, the goal is to experience the synthesis of neuroscience and music and teach students that the intersections are natural occurrences. Student assessment of their interdisciplinary understanding will be evaluated through direct participation, discussion, test, project analysis, and presentation.