University of Central Florida

Honors Interdisciplinary Seminar

The Burnett Honors College

Music and the brain

(3 Credit hours)

Syllabus and Schedule Subject to Revision.!

Contact:

Dr. Kiminobu Sugaya, Ph.D.
Burnett School of Biomedical Sciences
College of Medicine
Office: 6900 Lake Nona Blvd. BMS 412
Orlando Florida 32827-7401
Office: (407) 266-7045
Lab: 407) 266-7044
FAX: (407) 266-7002
email: ksugaya@ucf.edu

Dr. Ayako Yonetani, DMA
Department of Music
Office: PAC 127
Phone: (407) 823-6190
Email: yonetani@ucf.edu
URL: www.yonetani.com

Office Hours: by appointment

Short Course Description: Music affects human in many ways and it has been used to control peoples' mind. This class will explore the impact of sound and music on the brain function including mood, emotion, pain, cognition, and memory using interdisciplinary approach, the cutting-edge knowledge in neuroscience and basic analysis of music structure.

Course Description: Music has been used to control emotion and mood. Music therapy has been used to release stress and produce calm, meditative states. Music is also known to reduce the level of pain experienced by terminal cancer patients and the symptoms of depression. Recent evidence supports the assertion that listening to music helps improve cognitive and motor deficits in patients with brain injury or disease. Rats repeatedly exposed to complex music [Mozart Sonata (k. 448)], completed a maze more rapidly and with fewer errors than rats assigned to other music groups [minimalist music (a Philip Glass composition), white noise or silence] [Rauscher et al., 1998]. These results suggest that exposure to complex music induces improved spatial-temporal learning in rats, and similar conclusions have been drawn from studies performed with humans. The existence of neurophysiological mechanisms for the effects of music on learning, memory, emotion and mood are well accepted. For example, canaries stop singing every autumn when a population of brain cells responsible for song-generation dies. Over the winter, a whole new population of neurons grows back, and the canaries learn their songs all over again in the spring. Also, current research indicates mechanism of atypical antidepressants function increase stem cell population in the brain. Taken together with studies of music-induced neural plasticity, this fact indicates that music may increase neurogenesis in the brain. This class will explore the impact of sound and music on brain function including mood, emotion, pain, cognition, and memory using an interdisciplinary approach. The cutting-edge knowledge in neuroscience will be applied to basic analysis of music Syllabus and Schedule Subject to Revision.

structure and music impact.

Goals:
Offer updated neuroscience information related to the effects of music.
Understand effects of music on the brain function and human behavior.
Apply knowledge on music to control mood and ability in human subjects.

Course Objectives:
a. To investigate how the brain responds to music.
b. To explain how music affects brain function.
c. To achieve a basic understanding of the neuroscience aspects related to music.
d. To identify which type(s) of music will enhance learning ability.
e. To understand basic music structure, and the corresponding effects on the mind.
f. To identify which type of music can modify brain function by analyzing music structure.
g. To apply knowledge on the relationship between music and neuroscience to create digital media that can effectively modify brain function.

Textbooks:
(Required readings)
This is Your Brain on Music by Daniel J. Levitin.
(Recommended readings)
The cognitive neuroscience of music by Isabelle Peretz and Robert J. Zatorre
Music and the Mind by Anthony Storr
Music and Emotion: Theory and Research by Patrik N. Juslin and John A. Sloboda
Music, The Brain, And Ecstasy: How Music Captures Our Imagination by Robert Jourdain
Evaluations: 4 quizzes (100 Points each) plus class presentations* (600 Points)

Grading: Total Possible Points 1000
A: 900-1000 points (90≤ %)
B: 800-899 points (80≤ and <90 %)
C: 700-799 points (70≤ and <80 %)
D: 600-699 points (60≤ and <70 %)
F : <599 points

*The students will be divided into 6 groups of 3-4 individuals. Each presentation time will be 30 min. Although the contents of presentations are free, the students will be asked to explain the presented materials based on the learned concepts in the class. The presentations will be graded by creativity and quality of the materials, artistic and scientific representations, and clarity of explanations.

As a general policy, **we will not post grades**, with or without permission of the student nor will I give out grades over the telephone. I will not discuss a student's grade between completion of the final exam and the student's receipt of official university semester grades in the mail.
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Academic Honesty:
You will be held to the terms of academic honesty as dictated by UCF. Plagiarism, copying, and all other types of cheating will not be tolerated. All abuses will be reported to the University. Cheating, plagiarism, copying, or any attempt to represent the work of others as your own will not be tolerated and will result in a **FAILING** grade in the course.

Disability Access Statement
The University of Central Florida is committed to providing reasonable accommodations for all persons with disabilities. This syllabus is available in alternate formats upon request. Students with disabilities who need accommodation sin this course must contact the professor at the beginning of the semester (by the end of the second week) to discuss needed accommodations. No accommodation will be provided until the student has met with the professor to request accommodations. Students who need accommodations must be registered with Student Disability Services, Student Resource Center Room 132, phone (407) 823-2371, TTY/TDD only phone (407) 823-2116, before re- questing accommodations from the professor."

Class schedule: Tuesdays and Thursdays 1:30-2:45 pm.
Location: BHC 0127

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1/7/2020	Introduction (Syllabus)
1/9/2020	What is Music? What Music Can Do?
1/14/2020	Brain Basics1 (Brain structure and function)
1/16/2020	Music Basics1 (Rhythm and Beat)
1/21/2020	Perceiving and Moving to a Rhythmic Beat
1/23/2020	Moving Disorder and Music
1/28/2020	Music Basics 2 (Pitch and Frequency)
1/30/2020	Brain Basics 2 (Neuron and its function)
2/4/2020	Assignment (Find online information on music and the brain)
2/6/2020	Quiz 1 (Open-book Online Multiple Choice)
2/11/2020	Quiz 1 review and discussion of online searched materials.
2/13/2020	Perception of Music (Consonance and Dissonance)
2/18/2020	Perception of Music (Illusion and Gestalt law)
2/20/2020	Emotion and Music
2/25/2020	Music in Movies 1
2/27/2020	Music Effects on Emotion and Mood
3/3/2020	Quiz 2 (In Class followed by Review)
3/5/2020	Activation of Reward System and Prevention of Pain by Music
3/10/2020	Spring Break (No lecture)
3/12/2020	Spring Break (No lecture)
3/17/2020	Music Effect on Society
3/19/2020	Quiz 3 (In Class followed by Review)
3/24/2020	Music in Movies 2
3/26/2020	Language and Music
3/31/2020	Cognitions and Music
4/2/2020	Perspectives of the Music Therapy
4/7/2020	Quiz 3 (In Class followed by Review)
4/9/2020	Student Presentation 1
4/14/2020	Student Presentation 2
4/16/2020	Student Presentation 3
4/21-27/2020	Final Exam Week

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