



*Honors
Interdisciplinary
Seminar*



Music and the brain
(3 Credit hours)

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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 in the spring, the canaries learn their songs all over again. 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

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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 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: 5 quizzes (50 Points each), class presentations* (250 Points) plus a Final Exam (200 points)

Grading: Total Possible Points 700.

- A: 630-700 points (90≤ %)
- B: 560-629 points (80≤ and <90 %)
- C: 490-559 points (70≤ and <80 %)
- D: 420-489 points (60≤ and <70 %)
- F : <420 points

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.

Academic Honesty:

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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 in 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-requesting accommodations from the professor.”

Class schedule: Tuesdays and Thursdays 9:00-10:15 am.

Location: BHC 0126

*The students will be divided into 5 groups of 3 or 4 individuals. Each presentation will be 30 min. Each group of students will be given a scene cut from movie and a section of music. They will be asked to find at least 3 different sections of music that match the assigned scene cut, and at least 3 different scene cuts from movie that match the assigned section of music, respectively. Then the student will be asked to explain relationship between the scene cut from movie and the section of music based on what they have learned during the course. The class presentations will be graded by selection of the materials, quality of (e.g. creative and artistic) representations, and clarity of explanations based on the learned concepts.

Schedule

1/10/2017	Introduction
1/12/2017	Music basic 1
1/17/2017	Brain Basic 1
1/19/2017	Music basic 2
1/24/2017	Brain Basic 2
1/26/2017	Music basic 3
1/31/2017	Autonomic System
2/2/2017	Quiz1 (Open book online)
2/7/2017	Review on Quiz1
2/9/2017	Music basic 4
2/14/2017	Pain
2/16/2017	Music basic 5
2/21/2017	Music culture and perception
2/23/2017	Quiz 2
2/28/2017	Reward System
3/2/2017	Music affect on mood
3/7/2017	Reward System
3/9/2017	Music affect on emotion
3/14/2017	Spring Break
3/16/2017	Spring Break
3/21/2017	Quiz 3
3/23/2017	Parkinson
3/28/2017	Music in movies 1
3/30/2017	Quiz 4
4/4/2017	Memory
4/6/2017	Music in movies 2
4/11/2017	Quiz 5
4/13/2017	Presentation
4/18/2017	Presentation
4/20/2017	Presentation
4/25/2017	Study day
5/2/2017	Final Exam (1:00 pm-3:50 pm)

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