



Harvard College
Spring Term, 2007-2008 Academic Year
January 30 – May 2, 2008
Study Card Day: Feb. 6, 2008

Mind/Brain/Behavior 98: Music & The Brain

Wednesdays 6:30 – 9:30 PM
William James Hall, 13th Floor, Room 1305
No Sections

Syllabus

Updated Jan. 30, 2008

Faculty

Mark Jude Tramo, MD, PhD

Director, The Institute for Music & Brain Science
Department of Neurology, Harvard Medical School & Massachusetts General Hospital
Steering Committee, Harvard University Mind/Brain/Behavior Interfaculty Initiative
Board of Honors Tutors, Department of Psychology, Harvard University
Teaching Affiliate, Department of Biology, Harvard University
Research Affiliate, Research Laboratory of Electronics, M.I.T.
Songwriter Member, ASCAP

www.BrainMusic.org

Office hours by appointment, The Institute for Music & Brain Science, 175 Cambridge St, Suite 340, Room 382, Boston

Course Description

MBB 98: Music & The Brain, now in its 12th year in the FAS courses of instruction (formerly Psychology 987b), takes a multidisciplinary approach to understanding neural systems governing music perception, performance, and cognition. Students are expected to master selected topics in acoustics, music, psychophysics, cognitive psychology, neurophysiology, neuroanatomy, and neurology. The course begins with a series of lectures by Professor Tramo that provides a common fund of knowledge in functional neuroanatomy, auditory neurophysiology, psychoacoustics, cognitive psychology, and music for students with diverse backgrounds. Thereafter, individual seminars focus on specific themes, such as pitch perception, harmony perception, emotion and meaning in music, and talent and creativity. Seminars are designed to help students: 1) cultivate analytical skills through critical appraisals of "primary-source" experimental literature published in peer-reviewed science, medical, music, and education journals; and 2) develop oral presentation skills in a supervised setting. Semi-weekly reading and homework problem sets from the required text, Rossing's *Science of Sound*, solidify working knowledge of basic concepts (e.g., resonance, decibels, scales) needed for the advanced readings that are the springboard for each seminar's provocative discussions of neuroscientific data collection and analysis

methods, results, interpretation, and corroboration.

Prerequisites

Secondary school mathematics and physics. No music background necessary. If you are not familiar with the vocabulary of music, get the Harvard Dictionary of Music, which is listed below under Recommended Books and is available at the Coop.

Books (available at Harvard Coop unless otherwise noted)

Required

The Science of Sound, Rossing, Moore, and Wheeler, 2001

Recommended

Core Text of Neuroanatomy, Malcolm Carpenter (any edition) – available at Amazon

The Harvard Dictionary of Music: Fourth Edition, D.M. Randel (Editor), 2003

The Auditory Cortex, L.A. Aitkin, 2003

Introduction to the Psychology of Hearing, 5th Edition, Brian Moore, 2003

The Psychology of Music, 2nd Edition, Diana Deutsch (Editor), 1999

Music, Language, and the Brain, Aniruddh D. Patel, 2007

Requirements & Grading

- Weekly attendance and participation in seminar discussions that reflects you have read the assigned journal papers (20-25%)
- Performance on homework problem sets (35-40%)
- Oral presentations of papers using overheads or powerpoint at 1-3 seminars (35-40%; first presentation is not graded to allow for practice and feedback)
- No exams, no term papers

Lecture & Seminar Schedule

Jan. 30: Lecture

Introduction
Brain Organization & Behavior
Musical Phonology

Feb. 6: Lecture

Experimental Methods
The Auditory Nervous System

Feb. 13: Seminar

Pitch I

Feb. 20: Seminar

Pitch II

Feb. 27: Seminar

Harmony I

March 6: Seminar

Harmony II

March 12: Seminar

Melody

March 19: Seminar

Rhythm

March 26: Spring Recess

April 2: Seminar

Timbre & Voice

April 9: Seminar

Speech & Prosody

April 16: Seminar

Emotion & Meaning

April 23: Seminar

Evolution, Development & Plasticity

April 30: Seminar

Intelligence, Talent & Creativity