Course Information

Teaching Assistant
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Meeting Time and Place
Meeting Dates: 2020/3/31 - 2020/6/8

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Time</th>
<th>Final presentations</th>
<th>COVID 19:</th>
<th>Spring 2020 will be available BOTH synchronously and asynchronously.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TuTh</td>
<td>12:30PM - 1:50PM via Zoom</td>
<td>M 11:30AM-2:30PM, 6/8/2020 (scheduled final exam)</td>
<td>Th 2:00-3:00PM, or by appointment (Smyth/Zurale)</td>
<td>Th 2:00-3:00PM, or by appointment (Smyth/Zurale)</td>
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Course Description

Prerequisites
Music 170 or 171 (or permission by instructor).

Grading
- Quizzes (3 X 15% each): 45%
- Selected paper presentations: 15%
- Assignments/Discussions: 20%
- Final project 20%

Required Textbooks
- Perry R Cook (editor). Music, Cognition, and Computerized Sound: An Introduction to Psychoacoustics (available on campus)
- Brian Moore. An Introduction to the Psychology of Hearing (available on campus)
- Music 175 on-line notes.

Quizzes
Quizzes will be available on Canvas and will be based on lectures, assigned readings, and student presentations.

Important Dates
- Thursday, April 9, 2020: Paper sign-up;
- Tuesday, April 21, 2020: Quiz 1;
- Thursday, May 7, 2020: Project proposals;
- Thursday, May 14, 2020: Quiz 2;
- Thursday, June 4, 2020: Quiz 3;
- Monday June 8, 2020, 11:30AM-2:30PM: Final project presentations;

Schedule and Online Lecture Notes (subject to change)

- Week 1:
  - Introduction to Music 175
  - Sound: what is sound? acoustics vs. psychoacoustics.

- Week 2:
  - Hearing: pressure, power, intensity, quiet scale
  - Frequency representation of sound, Fourier analysis, spectrograms, waveform, Pd patches
  - Reading: Cook, Chapter 4.

- Week 3:
  - Hearing in Time and Space:
    - “cocktail party effect”, binaural masking, precedence effect, temporal integration.
  - Reading: Cook, Chapter 8.

- Week 4:
  - Hearing in Time and Space (cont.):
    - Field trip: Audio Spatialization Lab (Spat Lab), Calit2 (canceled, COVID 19).
  - Quiz 1: Monday April 20, 2020 (last 45 mins of class)
  - Student paper presentations Hearing in Time and Space
    - studentname: “A General Model for Spatial Processing of Sounds”
    - studentname: “Comparative Study of European Concert Halls”
    - studentname: “Synchronization in Performed Ensemble Music”

- Week 5:
  - Student paper presentations Hearing in Time and Space
    - studentname: “Monaural Detection of Phase Difference Between Clicks”
    - studentname: “The CIPIC HRTF Database”
    - studentname: “Discriminability of Time-Reversed Pairs of Clicks”

- Week 6:
  - Cognitive Psychology and Music
    - unconscious inference vs. direct perception (Gibsonian, perceptual completion, gestalt grouping principles)
    - Reading: Cook, chapter 3

- Week 7:
  - Ambiguity in Music
    - ambiguity, common fate, separation with apparent motion, pitch paradox.
    - Quiz 2: May 14, 2020 (Thursday, last 45 minutes)
    - Reading: Cook chapter 10.

- Week 8:
  - Pitch
    - base theory of pitch, repetition pitch, pitch paradox, jud.
    - Reading: Cook, chapter 5
    - Student paper presentations Pitch (Perception)
      - studentname: “Perception and Pitch Perception”
      - studentname: “Circularity in Judgments of Relative Pitch.”
Selected Paper Presentation

- Select a paper from the list below (additional paper suggestions are welcome, but should be approved by the instructor).
- Prepare a 10-minute paper presentation for the class.
- Sign up (on Canvas) by the end of the second week.
- A precise date will be assigned after the second week, however an approximate date can be found in the Schedule.

Hearing in Time and Space

Assignments

Assignment are to be submitted on CANVAS by 12:30PM (before class) on the day they are due.

- Final project proposal: write a brief (1-2 paragraph) proposal describing your project and submit on CANVAS. Once you receive approval from the TA, you may begin working on your project.

Bioacoustics (Animal Hearing/Perception)
- studentname: “Interval-Class Content in Equally Tempered Pitch-Class Sets: Common Scales Exhibit Optimum Tonal Consonance.”
- studentname: “Local Consonance and the Relationship Between Timbres and Scale.”
- studentname: “More than Just Notes: Psychoacoustics and Composition”
- studentname: “Calculation of the aural properties of triadic harmonies.”

Pitch (Consonance)
- studentname: “Timbral Consonance and Critical Bandwidth.”
- studentname: “The Tritone Paradox: Correlate with the Listener’s Vocal Range for Speech”.

Pitch (Scales)
- studentname: “Harmony and Nonharmonic Partials.”
- studentname: “Beating Theories of Musical Consonance.”
- studentname: “Tonal Consonance and Critical Bandwidth”
- studentname: “Attaining Consonance in Arbitrary Scales.”

Student paper presentations

- Pitch cont.
  - scales, periodicity, intervals, beating, Rameau and inversions, null points in scales, cents
  - Reading: Cook chapter 13 and 14

- Student paper presentations
  - Pitch (Consonance)
  - studentname: “Timbral Consonance and Critical Bandwidth.”
  - studentname: “The Tritone Paradox: Correlate with the Listener’s Vocal Range for Speech”.

- Student paper presentations
  - Pitch (Scales)
  - studentname: “Harmony and Nonharmonic Partials.”
  - studentname: “Beating Theories of Musical Consonance.”
  - studentname: “Tonal Consonance and Critical Bandwidth”
  - studentname: “Attaining Consonance in Arbitrary Scales.”

- Student paper presentations
  - Bioacoustics (Animal Hearing/Perception)
  - studentname: “Bat echolocation calls facilitate social communication”
  - studentname: “Extremely high frequency sensitivity in a ‘simple’ ear” (Hearing in moths)
  - studentname: “Fin Whale Sound Reception Mechanisms”

- Quiz 3: June 4 2020 (last 45 minutes)
Pitch (Scales)


Bioacoustics (Animal Hearing/Perception)


29. Mirjam Knörnschild et all. “Bat echolocation calls facilitate social communication”, available.


Final Project

The project includes a proposal (a brief 1-2 paragraph description to be approved by TA/instructor), a presentation (five minutes during the final exam period) and may consist of:

• research paper (5-10 pages): topic of choice with the following rubric:
  1. style: consistently follow a standard research style, e.g. APA, Chicago, etc.
  2. content: well written and clear, the information is correct and accurate, and includes at least two scientific sources (citations):
    • design a listening experiment in pd + (shorter) paper;
    • analyze a musical composition (or create your own) illustrating an auditory effect + (shorter) paper
    • other