RAT-1500: RECORDING THEORY I

Cuyahoga Community College

Viewing: RAT-1500 : Recording Theory I

Board of Trustees:
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Academic Term:
2018-08-27

Subject Code
RAT - Recording Arts & Technology

Course Number:
1500

Title:
Recording Theory I

Catalog Description:
Introduction to practical techniques of multi-track recording. Session operating procedures, multiple microphone placement, track assignment, overdubbing, mixdown, and console and recorder operation included.

Credit Hour(s):
3

Lecture Hour(s):
3

Requisites

Prerequisite and Corequisite
RAT-1320 Audio Transducers, and RAT-1311 Studio Operations; and concurrent enrollment in RAT-1511 Recording Lab I, and departmental approval.

Outcomes

Course Outcome(s):
Identify and explain function of monitor signal path components on large format analog and digital consoles.

Objective(s):
1. Identify and explain function of console control room source select buttons.
2. Identify and explain function of console aux returns.
3. Identify and explain function of console control room volume control.
4. Identify and explain function of console speaker select buttons.
5. Identify and explain function of console stereo bus.
6. Identify and explain function of console master fader.
7. Identify and explain function of console monitor fader.
8. Identify and explain function of console monitor pan.
9. Identify and explain function of console aux sends (pre post fader).
10. Identify and explain function of console aux masters.

Course Outcome(s):
Identify and explain function of input signal path components on large format analog and digital consoles.

Objective(s):
1. Identify and explain function of console phantom power.
2. Identify and explain function of console pad.
3. Identify and explain function of console mic/line switch.
4. Identify and explain function of console polarity button.
5. Identify and explain function of console filters.

6. Identify and explain function of console eq section.
7. Identify and explain function of console routing matrix.
8. Identify and explain function of console odd/even pan control.
9. Identify and explain function of console subgroup masters.

Course Outcome(s):

Summarize digital console operation procedures.

Objective(s):

1. Identify functions of digital console layers.
2. Summarize digital console fader modes.
3. Review analog to digital signal conversion.
4. Review digital to analog signal conversion.

Course Outcome(s):

Identify basic components of commonly recorded instruments.

Objective(s):

1. Identify the components of a drum set.
2. Identify the components of a guitar/bass.
3. Distinguish between different amplifier types.

Course Outcome(s):

Summarize connections found in the studio and control room.

Objective(s):

1. Summarize connections found on studio wall panels.
2. Identify and explain function of two-track return patch points.
3. Identify and explain function of monitor input patch points.
4. Identify and explain function of aux send patch points.
5. Identify and explain function of aux return patch points.
6. Identify and explain function of mic input patch points.
7. Identify and explain function of direct output patch points.
8. Identify and explain function of subgroup output patch points.
9. Describe patch bay normaling schemes.

Course Outcome(s):

Summarize session recording/mix techniques and processes.

Objective(s):

1. Describe appropriate listening levels.
2. Explain signal gain structuring processes.
3. Identify appropriate recording/mix layback levels.
4. Review mic selection and technique for recording.
5. Explain setup and usage of DI (direct injection) boxes.
6. Summarize the difference between signal phase and polarity.
7. Explain DAW mix template creation.
8. Identify techniques to make a session mix ready.
9. Recognize appropriate reference material for recording and mixing.
10. Explain the process of mix balancing using filters, faders and pans.
11. Explain mix layback process using external 2 track recorders and within the DAW environment.

Course Outcome(s):

Summarize session signal routing techniques.

Objective(s):

1. Recognize “inline” console configurations.
2. Recognize “split design” console configuration.
3. Summarize routing techniques for parallel processing.
4. Summarize routing techniques for serial processing.
5. Explain cue send/talkback creation and operation.

6. Explain bus routing techniques used during tracking and/or mixing sessions.

Course Outcome(s):

Discuss basic studio acoustics principles.

Objective(s):

1. Explain effect of studio dimensions on sound.
2. Explain effect of room modes on sound.
3. Explain effect of comb filtering on sound.
4. Explain effect of flutter echo on sound flutter echo.
5. Summarize the use of absorption to treat acoustical problems in a listening space.
6. Summarize the use of diffusion to treat acoustical problems in a listening space.

Course Outcome(s):

Describe introductory aspects of session pre-production.

Objective(s):

1. Identify appropriate questions for potential clients to identify scope of project.
2. Discuss tracking room layout for recording session.
3. Identify elements of effective session documentation.
4. Summarize basic elements of song arrangement and orchestration.

Methods of Evaluation:

1. Written exams covering assigned reading and lecture material
2. Worksheet assignments
3. Professional behavior
4. Participation and discussion

Course Content Outline:

1. Console monitor path
   a. Two-track returns, control room volume, speaker selectors, and appropriate listening levels
   b. The stereo bus and the master fader
   c. Monitor inputs, monitor faders, and monitor pans
   d. Aux sends and routing time-based processors
   e. Console insert send/returns and routing dynamics-based processors
   f. Creating cue sends and using console talkback features
2. Console input path
   a. Mic inputs, pad, pre-amp trim, and mic-line switch
   b. Polarity switch, filters, and equalizers
   c. Bus routing, direct outputs, and D.A.W. I/O
3. Session Technique and Routing
   a. Gain structuring and recording levels
   b. Wall panels and patchbays
   c. Inline vs. split console configurations
   d. Digital console configurations
   e. Makeup of instruments, drums/guitars/amps
   f. Using DI"s alone and with amps, connecting speakers to amps, and appropriate use of ground lifts
   g. Choosing microphones for a recording session
   h. Checking phase and polarity
   i. D.A.W. mix template creation
   j. Preparing tracks for mixing
   k. How to pick and use reference material for tracking and mixing
   l. Using filters, faders, and pans to create mix balances
   m. Mix layback, loudness metering, frequency analysis and phase metering
4. Studio Acoustics

   a. Room dimensions
   b. Absorption
   c. Diffusion
5. Session Preproduction
   a. Project scope and preparation
   b. Session documentation
   c. Song arrangement
   d. Song orchestration

Resources

Lellis, Carlos. *Music Production - Recording.* Burlington, MA: Taylor Francis Group, 2013.

Bartlett, Bruce and Bartlett, Jenny. *Practical Recording Techniques: The Step-by-Step Approach to Professional Audio Recording.* 7th ed. Waltham, MA: Focal Press, Taylor Francis Group, 2017.

Dowsett, Peter. *Audio Production Tips.* New York, NY: Taylor Francis Group, 2016.

Senior, Mike. *Mixing Secrets for the Small Studio.* Burlington, MA: Taylor Francis Group, 2011.

Senior, Mike. *Recording Secrets for the Small Studio.* Burlington, MA: Taylor Francis Group, 2015.

Owsinski, Bobby. *Mixing and Mastering with Ik Multimedia T-Racks: The Official Guide.* Boston, MA: Course Technology PTR, 2011.

Huber, David Miles and Runstein, Robert E. *Modern Recording Techniques.* 9th edition. New York, NY: Taylor Francis Group, 2017.

"AES: Journal of the Audio Engineering Society"

"Sound On Sound"

"Recording Magazine"

"Electronic Musician"

Resources Other

1. Audient ASP 8024 Operation Manual
2. Avid Control 24 Guide
3. Avid D-Command Guide
4. Solid State Logic Duality Operator"s Manual
5. TL Audio M4 Tube Console User Manual
6. Toft Audio Designs ATB Series Console Manual
7. Yamaha Digital Production Console DM 2000 Version 2 Owners Manual
8. CCA026A SSL Duality QUICKSTARTv3
9. CCA028 Toft ATB QUICKSTARTv3
10. CCA030 Yamaha DM 2000 Quick Start Guide
11. CCA033 TL Audio M4 QUICKSTARTv3
12. CCA303 Digidesign C24 QUICKSTARTv3
13. CCA310A Audient QUICKSTARTv3

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