

Journal of the Music Entertainment Industry Educators Association

Shaping Future Audio Engineering Curricula: An Expert Panel's View

David Tough

Belmont University

Rank	Category*	Competency	Mean**
1	COM	Demonstrate the ability to work hard and complete projects.	4.9
2	COM	Recognize the need for personal responsibility.	4.9
3	COM	Demonstrate the ability to be an effective listener towards co-workers and clients.	4.87
4	COM	Demonstrate the ability to communicate clearly and tactfully with clients and co-workers.	4.87
5	COM	Develop the ability to be professional around clients.	4.87
6	GA	Demonstrate a BASIC knowledge of effects including EQ, reverbs, delays, gates, limiters.	4.87
7	COM	Demonstrate dependability.	4.84
8	COM	Demonstrate the ability to pay attention to detail.	4.84
9	COM	Show a strong passion for what they do.	4.84
10	GA	Analyze BASIC audio signal flow in the recording studio.	4.77
11	COM	Work effectively on a team.	4.77
12	COM	Put into practice the ability to handle criticism.	4.77
13	COM	Demonstrate flexibility and the ability to change and adapt to a dynamic environment.	4.74
14	COM	Demonstrate patience in a working environment.	4.74
15	COM	Demonstrate the ability to be self-starting.	4.74
16	COM	Develop the ability to be a "life-long learner" who continues in their personal development.	4.74
17	COM	Demonstrate the ability to interact with diverse types of people.	4.7
18	COM	Demonstrate the ability to avoid or resolve potential human conflict situations.	4.68
19	COM	Demonstrate an ability to use tact and diplomacy.	4.68
20	COM	Demonstrate an ability to handle delicate and high pressure situations in a professional manner.	4.65
21	DA	Backup and organize session data on an external hard drive/zip drive correctly.	4.61
22	GA	Engineer recording projects as an individual.	4.61
23	GA	Demonstrate recording session procedures for tracking, overdubbing, and mixing sessions.	4.61
24	DA	Demonstrate a working knowledge of the current computer platforms.	4.58
25	GA	Demonstrate an INTERMEDIATE knowledge of effects including EQ, reverbs, delays, gates, limiters.	4.58
26	COM	Develop the ability to work well under the authority of a mentor.	4.58
27	GA	Describe the stages and procedures used in the recording process.	4.58
28	DA	Demonstrate the ability to mix and edit in the digital audio realm.	4.58
29	COM	Demonstrate humility in a working environment.	4.58
30	GA	Develop an ability to successfully plan, conduct, and conclude a recording session.	4.55
31	COM	Display an ability to use sophisticated critical thinking (inquiry, reflection, and analysis) skills including quantitative reasoning; critical reading and reflection;	4.52
32	MBB	Understand BASIC business ethics.	4.52
33	GA	Develop an ability to successfully plan, conduct, and conclude a recording session.	4.52
34	COM	Inspire confidence in clients.	4.5
35	GA	Demonstrate BASIC knowledge and basic skill manipulating entry-level professional recording equipment.	4.48
36	GA	Apply and interpret a technical vocabulary as related to audio.	4.45
37	COM	Demonstrate leadership skills and the ability to lead a small team.	4.45
38	COM	Demonstrate the ability to think outside the box.	4.45
39	GA	Demonstrate an INTERMEDIATE competency in the use of studio microphone techniques.	4.45
40	DA	Demonstrate the ability to record audio on the then current computer platform using a current audio program.	4.45
41	GA	Demonstrate a BASIC ability to interface and integrate various audio formats into practical working systems.	4.42
42	DA	Demonstrate the ability to connect together into a meaningful recording system equipment employing differing digital interconnect formats.	4.42
43	DA	Troubleshoot BASIC computer problems on a PC and MAC.	4.42
44	GA	Assess the quality of recordings using basic critical listening skills.	4.42
45	COM	Demonstrate the ability to professionally present information to a group of peers.	4.39
46	DA	Troubleshoot digital clocking issues.	4.39
47	GA	Demonstrate a BASIC knowledge of loudspeakers, and amplifiers.	4.39
48	GA	Plan, organize, illustrate, and document recording session information according to industry standards.	4.39
49	MBB	Identify industry delivery requirements, the importance of submitting accurate documentation, and the impact on getting paid for services rendered.	4.35
50	DA	Demonstrate INTERMEDIATE understanding of principals of digital audio capture, conversion, editing, compression methods.	4.35

Journal of the Music Entertainment Industry Educators Association

Shaping Future Audio Engineering Curricula: An Expert Panel's View

David Tough

Belmont University

Rank	Category*	Competency	Mean**
51	GA	Demonstrate an INTERMEDIATE working knowledge of professional mixing techniques.	4.35
52	COM	Show a record of taking part in an internship.	4.35
53	COM	Recognize the need to balance family and work.	4.35
54	COM	Demonstrate the ability to resolve conflict through building consensus.	4.32
55	GA	Demonstrate an INTERMEDIATE knowledge of the language of record production.	4.32
56	GA	Perform practical examinations on basic audio equipment demonstrating a satisfactory level of proficiency.	4.32
57	GA	Understand and know how to eliminate ground hum.	4.32
58	GA	Demonstrate a BASIC knowledge of psychoacoustics and aural perception.	4.32
59	MUS	Identify instruments commonly used in commercial recording.	4.32
60	COM	Put into practice the ability to maintain a sense of humor.	4.32
61	MUS	Demonstrate an understanding of BASIC music terms.	4.29
62	COM	Identify approaches and means to professional development, including job-seeking strategies, and interview techniques.	4.29
63	COM	Understand and implement scientific method as applied to problem solving and fact development.	4.29
64	COM	Demonstrate critical reading skills.	4.26
65	DA	Apply BASIC terminology and theory, as related to digital recording and the digital audio workstation.	4.26
66	GA	Recognize and appraise differences in audio examples using critical listening skills.	4.26
67	GA	Demonstrate BASIC signal flow comprehension and application through operation of entry level consoles (Mackie, Toft, etc).	4.23
68	GA	Demonstrate satisfactory competency in the use of multiple studio environments.	4.23
69	GA	Engineer recording projects in a group setting.	4.23
70	GA	Demonstrate a BASIC knowledge of the tools and equipment commonly used in live audio.	4.19
71	GA	Apply BASIC terminology and theory, as related to internet audio.	4.19
72	GA	Identify techniques used in the creation of audio for motion picture, television, and video games.	4.19
73	GA	Demonstrate how to route and reroute a patch bay.	4.19
74	GA	Recall what music sounds like in a natural setting through attending several (live, symphonic, etc) concerts.	4.19
75	GA	Analyze and solve BASIC live acoustic problems.	4.16
76	GA	Have engineered a moderate # of recording projects (15-20) in the studio/lab.	4.16
77	MUS	Recognize different musical forms.	4.13
78	COM	Demonstrate the ability to write letters, technical papers, and other documents using good grammar, punctuation, and techniques.	4.13
79	DA	Demonstrate recording and editing proficiency on one hard disk editor/recorder.	4.13
80	MUS	Develop an appreciation of music as an art form.	4.13
81	GA	Identify and analyze live acoustic and audio	4.1
82	GA	Demonstrate an INTERMEDIATE knowledge of acoustics.	4.1
83	DA	Demonstrate INTERMEDIATE knowledge of the ProTools program.	4.1
84	GA	Associate the relationship of similar component functions between various consoles.	4.1
85	EET	Understand the BASIC function of electronic components and their relationship to each other.	4.06
86	GA	Demonstrate an INTERMEDIATE signal flow comprehension and application through operation of large format consoles (Neve, Harrison, SSL, etc).	4.06
87	COM	Examine the importance of building relationships within the local community.	4.06
88	DA	Record digital audio on a MAC.	4.06
89	DA	Recognize time code formats.	4.03
90	MUS	Develop a BASIC knowledge of different styles of music.	4.03
91	MBB	Identify the types of music business professionals to contact when you need music business help.	4.03
92	GA	Work on as many different pieces of equipment as possible.	4.03
93	DA	Demonstrate a working knowledge of microprocessors, operating systems, and software on a MAC.	4
94	GA	Predict the tonal spectrum of instruments and describe the effect on placement in a mix.	4
95	GA	Demonstrate an INTERMEDIATE knowledge of psychoacoustics and aural perception.	3.97
96	MBB	Demonstrate the ability to create and read a recording budget.	3.97
97	GA	Read spec sheets for mics, mixing consdes, loudspeakers, etc.	3.97
98	MBB	Understand the overall function and structure of the music industry.	3.94
99	MBB	Demonstrate a BASIC understanding of entrepreneurship principles.	3.94
100	MUS	Demonstrate a BASIC understanding of musical structure, compositional format, and rhythmic form.	3.94

Journal of the Music Entertainment Industry Educators Association

Shaping Future Audio Engineering Curricula: An Expert Panel's View

David Tough

Belmont University

Rank	Category*	Competency	Mean**
101	MUS	Demonstrate BASIC aural skills - intervals, chords, etc.	3.9
102	DA	Demonstrate a BASIC ability to use multiple DAW platforms.	3.9
103	COM	Find information on new technologies and professional audio resources... MIX, gearslutz, AES, etc.	3.9
104	COM	Negotiate effectively with artists.	3.9
105	MUS	Demonstrate the ability to follow a chord chart/lead sheet.	3.9
106	COM	Demonstrate a basic knowledge of math - formulas, addition, subtraction, division, multiplication.	3.9
107	GA	Record, mix, and author a song to a CD	3.9
108	EET	Demonstrate BASIC knowledge of physics as applied to transducer polar patterns.	3.87
109	DA	Demonstrate an INTERMEDIATE knowledge of recording and mixing in surround sound.	3.87
110	GA	Plan a performance with multiple performers and input cable layouts.	3.87
111	EET	Demonstrate a BASIC knowledge of electronic circuits to an extent that will allow selection of appropriate signal paths.	3.87
112	MUS	Identify styles of music ranging from classical to popular.	3.84
113	GA	Demonstrate an INTERMEDIATE working knowledge of professional mastering techniques.	3.84
114	DA	Demonstrate BASIC knowledge of wireless networking, Bluetooth, UWB and other wireless communication protocols.	3.84
115	MUS	Recognize the difference of the voice ranges: Soprano, Mezzo, Alto, Tenor, Baritone, Bass, etc.	3.84
116	DA	Organize and label session files using NARAS standards.	3.84
117	GA	Demonstrate an INTERMEDIATE knowledge of live sound techniques.	3.77
118	MUS	Identify the working ranges of the instruments used in recorded music.	3.77
119	MBB	Recognize music industry associations related to their field.	3.77
120	GA	Demonstrate an INTERMEDIATE knowledge of live sound system setup.	3.74
121	GA	Demonstrate an INTERMEDIATE working knowledge of sound engineering for commercials.	3.74
122	MID	Know different types and functions of virtual instruments.	3.74
123	GA	Associate the effects of the overtone series, instrument timbre, and key signature to potential microphone selection, preamp choice, and use of equalization.	3.71
124	COM	Recognize the need for personal morals/ spirituality.	3.71
125	MBB	Demonstrate knowledge of how to legally use prerecorded sounds and clear samples.	3.68
126	MID	Demonstrate a working knowledge of sequencing in the current format/software.	3.68
127	MBB	engineer.	3.65
128	GA	Manage and understand workflow in the studio by completing case studies of notable engineers and projects.	3.65
129	EET	Know how transducers work.	3.65
130	MBB	Demonstrate a BASIC understanding of copyright law, publishing, contracts, and licensing.	3.61
131	GA	Describe the development of sound for picture technology and the requisite techniques and workflows used.	3.61
132	MBB	Demonstrate a BASIC knowledge of music licensing.	3.61
133	DA	Demonstrate an INTERMEDIATE working knowledge of professional video techniques in a DAW.	3.61
134	MUS	Describe musical aspects of existing sound recordings and categorize into different musical genres.	3.58
135	EET	Use a soldering iron.	3.58
136	GA	Design and execute a blind (or double-blind) critical listening test.	3.55
137	MID	Describe basic MIDI/Synthesizer theory and technology.	3.55
138	GA	Engineer at least one project that involves simultaneous venue sound reinforcement and recording.	3.55
139	GA	Know what classic pieces of outboard equipment sound like.	3.55
140	MBB	Demonstrate a BASIC knowledge of marketing.	3.52
141	EET	Demonstrate a BASIC knowledge of soldering, troubleshooting analog wiring recapping, and other common studio maintenance and repairs.	3.52
142	COM	Develop the ability to use Microsoft Office for word-processing.	3.52
143	DA	Apply an ADVANCED language of state of the art digital signal processing.	3.48
144	GA	Design, assemble, trouble-shoot and operate small venue sound systems with a knowledge base of large concert venue sound systems.	3.48
145	GA	Recover material from damaged media in both digital and analog formats.	3.48
146	GA	Demonstrate an ability to read and understand block diagrams.	3.48
147	MBB	Demonstrate a BASIC knowledge of music publishing.	3.45
148	EET	Understand international electricity.	3.45
149	EET	Demonstrate the knowledge of relationships between watts, amps and load, earth leakage breakers, and power essentials.	3.45
150	GA	Know how to wrap a cable.	3.45

Journal of the Music Entertainment Industry Educators Association

Shaping Future Audio Engineering Curricula: An Expert Panel's View

David Tough

Belmont University

Rank	Category*	Competency	Mean**
151	EET	Correctly build a moderate variety of wired cables (mic, speaker, RCA, etc.)	3.42
152	EET	Know wiring standards of different manufacturers (AES D sub, Tascam, Yamaha, etc).	3.39
153	MUS	Identify music productions from different recording eras.	3.39
154	MBB	Demonstrate a functional knowledge of music products marketing, promotion, and merchandising.	3.29
155	MBB	Identify and examine the foundations of copyright law and the representative licenses needed for making money from different music revenue streams.	3.29
156	COM	Develop the ability to use software packages other than Microsoft's for presentations, word processing, and accounting	3.29
157	DA	Apply a BASIC knowledge of digital circuit theory and digital signal processing to the design of digital audio systems.	3.27
158	MUS	Develop relative pitch to INTERMEDIATE ability.	3.26
159	GA	Know the general history of recording technology (1877-present).	3.23
160	MUS	Develop an ADVANCED ability to play one or more instruments.	2.65

Demonstrate an understanding of accounting skills required in the role of the recording

* Category of competency

GA = General Audio

MID = MIDI

DA = Digital Audio

MBB = Music Business/ Business

MUS = Music

EET = Electronics

COM = Communications/Leadership/Other

** Mean rating assigned by Delphi panelists based on the anchored scale:

5 = very important

4 = important

3 = moderately important

2 = of little importance

1 = not important

Appendix A. Final ranking of competencies needed by students in 2019 by expert panel. A student graduating from a four-year AET program in 2019 should be able to...