



MASSACHUSETTS

Department of Elementary
and Secondary Education



Multimedia Production and Broadcast Standards and Skills

July 2025

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Introduction

Each framework is made up of standards, skills, and industry recognized credentials. Each standard has a reference to credentials when appropriate. Standards are critical areas of competency aligned to industry identified needs and industry recognized credentials (IRCs) that will support student success in the field. Standards provide the structure that empowers the teacher to choose the best curriculum and instructional approaches to guide skill and knowledge development for students. The standards below are cross walked with the Essential Industry Credentials. Further information about credentials is available in the Credentials of Value section of this document.

Health & Safety Standards

Standard 1: Safety and Health in a Multimedia Production and Broadcast Environment

Students will demonstrate adherence to studio guidelines and procedures, following OSHA safety standards and industry best practices, to prevent accidents, injuries, and ensure a safe working environment.

Aligned Credentials: OSHA 10 - General

Skills:

- a. Identify, describe, and demonstrate the effective use of Safety Data Sheets (SDS) to meet documentation requirements.
- b. Locate emergency equipment, first aid kit, and emergency action and response plan, including labels and signage that follow OSHA Hazard Communication Program (HAZCOM).
- c. Demonstrate inspection, testing, and maintenance of studio equipment to identify and address potential hazards, encompassing cameras, lighting instruments, audio equipment, and production machinery.
- d. Identify necessary Personal Protective Equipment (PPE) and ensure the correct use of appropriate protective gear, including gloves, eye protection, and ear protection, as needed, to effectively reduce workplace hazards.
- e. Analyze essential ergonomic standards aimed at injury prevention among broadcast media personnel, focusing on workstation design, appropriate seating, and the use of ergonomic equipment.
- f. Examine standards related to noise exposure to protect broadcast media workers from hearing loss and other health effects caused by prolonged exposure to

elevated levels of noise.

- g. Demonstrate safe handling of electrical equipment according to manufacturers' guidelines and industry standards.
- h. Identify and mitigate electrical hazards to maintain a safe working environment in the broadcast studio.
- i. Implement proper grounding techniques to ensure equipment and personnel safety.
- j. Examine chemical safety standards encompassing safe handling, storage, labeling, and disposal of hazardous chemicals to safeguard workers from exposure.
- k. Arrange cameras and production equipment to ensure clear aisles and unobstructed emergency egress paths are maintained throughout the studio.
- l. Demonstrate proper hanging of lighting instruments following manufacturer's guidelines and using safety cables.
- m. Demonstrate safe ladder usage, including inspection, placement on stable and level surfaces, and maintaining three points of contact while climbing.
- n. Demonstrate proper use of ladders with equipment, ensuring that equipment is securely fastened and within specified weight limits.
- o. Demonstrate on-location safety practices in accordance with current industry safety standards, e.g., production equipment placement, cables and covering techniques, securing lighting equipment, and working with electrical sources.
- p. Follow proper procedures for handling AC and battery-powered cinema and video equipment.
- q. Examine fire safety standards, encompassing fire prevention measures, emergency evacuation procedures, fire alarms, extinguishing systems, and the maintenance of fire exits and routes.

Technical & Integrated Academic Standards

Standard 2: Role of Multimedia Production and Broadcast Professionals in Society

Students will analyze the pivotal role of media production and broadcast professionals in society, the evolution of broadcast practices, technological advancements, and the impact of multimedia production and broadcast on societal awareness and engagement.

Aligned Credentials: Adobe Premiere Certified Professional, AVID Certified User, Final Cut Pro – Certified Associate

Skills:

- a. Analyze the role of multimedia broadcast professionals in the dissemination of news, information, and current affairs to the public and evaluate their impact and responsibilities in shaping public perception and understanding through various media platforms.
- b. Explain how broadcast media's role continues to evolve with advancements in technology, changes in audience preferences, and the dynamic demands of entertainment consumption and evaluate how these advancements influence content creation, audience engagement, and industry practices.
- c. Examine how the Federal Communications Commission (FCC) regulations have evolved over time in response to technological advancements, legislative mandates, court rulings, and shifts in policy priorities, addressing new challenges and opportunities in the telecommunications and broadcasting sectors.
- d. Analyze emerging trends and technologies shaping the multimedia broadcast landscape, virtual reality (VR), augmented reality (AR), artificial intelligence (AI), and immersive storytelling techniques.

Standard 3: Fundamentals of Broadcast Media Production

Students will demonstrate knowledge of broadcast formats, standards, and production workflows to effectively create and distribute multimedia content suitable for broadcast or online platforms.

Aligned Credentials: Adobe Premiere Certified Professional, AVID Certified User, Final Cut Pro – Certified Associate

Skills:

- a. Determine the purpose, audience, and audience needs to tailor content and enhance viewer engagement.
- b. Develop programming that informs, educates, entertains, or persuades audiences, including scriptwriting, storytelling techniques, and production planning.
- c. Explain the main types of writing styles, e.g., expository, descriptive, persuasive, and narrative.
- d. Demonstrate working effectively in teams comprised of producers, directors, writers, technicians, and talent to execute broadcast projects successfully.
- e. Determine the type of copyright, permissions, and licensing required to use specific content.
- f. Examine the production process from pre-production (planning, scripting) to production (shooting, recording) and post-production (editing, sound mixing, distribution).
- g. Identify and explain the characteristics of broadcast standards, such as ATSC 3.0 and DVB, including their differences from non-broadcast media formats, and how these standards impact content distribution across various platforms, including terrestrial, satellite, cable, and digital media.
- h. Compare and contrast the effectiveness of different transmission methods including terrestrial, satellite, digital and analog, cable, and streaming, in reaching diverse audiences, considering factors such as coverage, quality, and cost-efficiency.
- i. Compare technical specifications, advantages, and limitations of broadcast formats, such as High Definition (HD), Ultra High Definition (UHD), and High Dynamic Range (HDR).
- j. Investigate emerging formats, such as 4K, 8K, streaming technologies, and their

impact on production workflows.

- k. Compare and contrast television color standards [Red/Green/Blue (RGB) vs. 601/709].
- l. Identify and apply common aspect ratios, e.g., 4:3, 16:9, letterbox, and pillarbox.
- m. Explain chroma subsampling and its relationship to video imaging.

Standard 4: Fundamentals of Video Design and Pre-Production

Students will apply video design principles and pre-production techniques to create compelling narratives for television, online streaming, and digital media platforms, while demonstrating technical proficiency in executing their production plans to produce high-quality visual content.

Aligned Credentials: Adobe Premiere Certified Professional, AVID Certified User, Final Cut Pro – Certified Associate

Skills:

- a. Apply storytelling techniques, including narrative structure, character development, and pacing, to create engaging video content.
- b. Identify different types of script formats, e.g., news rundown, screenplay, radio, shooting, documentary, teleplay, and commercial, and develop clear, engaging scripts with scene descriptions, voiceovers, dialogues, and on-screen text.
- c. Create clear and concise storyboards outlining shot sequences and visual concepts.
- d. Apply elements of visual design, such as framing, composition, lighting, color theory, and camera angles to enhance visual storytelling.
- e. Compare and contrast the principles and techniques of video design and cinematic design, analyzing how each discipline employs visual design and editing to achieve specific effects.
- f. Explain and apply elements of design (line, texture, color, scale, movement) and composition (rule of thirds, built-in frame, strong diagonal, leading lines, symmetrical and asymmetrical balance) to enhance visual storytelling.
- g. Apply advanced composition techniques (Golden Rectangle, Fibonacci spiral) and analyze their use in creating compelling visual narratives.
- h. Describe the roles and responsibilities of key personnel in video production (director, producer, camera operator, editor) and their contributions to the

production process.

- i. Describe use and function of elements of a video camera, e.g., lens/optics, liquid crystal display (LCD) screen, eye piece, zoom control, focus control, menu navigation, recording mechanism/media, battery/power adapter, and A/V input and output.
- j. Differentiate among types and uses of digital cameras, DSLRs, smartphones, studio, and ENG cameras.
- k. Demonstrate operation of video cameras, including settings adjustment, framing, and capturing high-quality footage.
- l. Demonstrate basic video camera adjustment functions, e.g., aperture, shutter speed, ISO, white/black balance, phase, gain, and filters.
- m. Apply rules of camera movement, e.g., nose room, head room, lead room, overscan areas, and safe areas.
- n. Perform and demonstrate basic and complex camera shots and movements, e.g., establishing shots, close-ups, tilt, track, dolly, and rack-focus.
- o. Identify advanced video camera accessories, e.g., jib arm, crane, tracking shot, waterproof housing, vehicle mounts, and aerial shooting mounts.
- p. Describe elements and demonstrate the use of a still/DSLR (Digital Single Lens Reflex) camera and accessories, e.g., lens/optics, LCD screen, eye piece, zoom control, focus control, menu navigation, recording media, battery/power adapter, and universal serial bus (USB) output.
- q. Demonstrate adjustment of DSLR camera functions, e.g., aperture, shutter speed, ISO, color balance, gain, and filters.
- r. Demonstrate the use of various DSLR camera support equipment, such as monopods, tripods, Steadicams, jibs, cranes, and matte boxes, including operating a camera with these tools to follow moving subjects while maintaining proper framing.
- s. Explain characteristics and purposes of varying frame rates, e.g., time-lapse, slow motion, and apply them appropriately.
- t. Develop plans for technical aspects, such as camera movements, lens choices, lighting, and audio recording setups.

- u. Develop a comprehensive production project plan including timelines, asset organization, team collaboration, and revision management.
- v. Coordinate logistics, such as location scouting, casting, obtaining permits, and managing resources to facilitate smooth production processes.
- w. Estimate costs and create budgets for video projects, considering equipment rental, props, and crew expenses.

Standard 5: Lighting, Sets and Props in Cinema and Video Production

Students will demonstrate basic lighting techniques and apply fundamental concepts related to set design and props in cinema and video production.

Aligned Credentials: Adobe Premiere Certified Professional, AVID Certified User, Final Cut Pro – Certified Associate

Skills:

- a. Examine the qualities and characteristics of light, including intensity, distribution, direction, color, movement, scale, texture, and hard/soft focus.
- b. Use industry terms relevant to lighting color theory, e.g., Kelvin color temperature, visible spectrum, and natural/artificial light.
- c. Explain the differences between spectral light and diffused light and describe their respective uses to achieve specific visual effects.
- d. Contrast properties of reflection and properties of refraction to assist with correct use of reflective surfaces.
- e. Analyze how color and light can evoke emotion from an audience.
- f. Demonstrate the use of gels or filters to adjust the color of light, manipulate color temperature, or apply creative effects.
- g. Explain the inverse square law in its relation to positional lighting.
- h. Identify, describe, and use lighting instruments in the studio, e.g., fluorescent, scoop, ellipsoidal, tungsten, hydrargyrum medium-arc iodide (HMI), and light-emitting diode (LED).
- i. Select and use field lighting instruments, e.g., soft boxes, and portable light kits.
- j. Describe grip and gaffing equipment, e.g., lighting and electrical supplies, rigging supplies and hardware, and specialty tapes.
- k. Demonstrate use of lighting instrument accessories, e.g., scrims, barn doors,

flags, cookies/gobos, reflector kits, grip kits, and gels.

- l. Identify and describe color temperatures specific to various lighting instruments.
- m. Differentiate between types of lighting techniques used for cinema and lighting techniques for video.
- n. Design a studio set up for three-point lighting, e.g., key, fill, and back.
- o. Plan and execute a studio light plot to meet production requirements.
- p. Diagram a dimmer/channel chart for a light plot in a studio to facilitate precise lighting adjustment.
- q. Develop a basic studio ground plan including equipment to improve workflow efficiency.
- r. Develop a remote-shoot ground plan to ensure logistic readiness and effective deployment of resources.
- s. Develop a concept sketch for a set piece and design a unit set for use in a cinema or video production.

Standard 6: Fundamentals of Broadcast Journalism

Students will demonstrate the ability to access, critically assess, and create media content across various platforms and formats, including digital, broadcast, and social media, by applying journalistic principles, production techniques, and ethical standards.

Aligned Credentials: Adobe Premiere Certified Professional, AVID Certified User, Final Cut Pro – Certified Associate

Skills:

- a. Explain the role of media literacy in today's broadcast journalism.
- b. Explain the characteristics and distinctions among news, features, opinion, sports, and other forms of journalistic writing and reporting.
- c. Demonstrate methods of gathering news through interviews, press releases, and investigative research, including identifying newsworthy stories, conducting interviews, and verifying information.
- d. Differentiate between writing styles for print and broadcast media, focusing on concise and effective communication suited for auditory consumption, and creating scripts for news stories, reports, and features.
- e. Demonstrate application of ethical principles and legal considerations specific to

broadcast journalism, including ensuring accuracy, fairness, objectivity, protecting privacy, avoiding defamation, and ethically handling confidential sources.

- f. Demonstrate conducting effective on-camera interviews, including techniques for engaging subjects, asking probing questions, and managing various interview scenarios.
- g. Demonstrate on-camera presentation skills for live reporting, anchoring, and field reporting techniques, including voice modulation, articulation, and presence.
- h. Integrate various media elements (video, audio, graphics) into broadcast journalism stories to enhance storytelling and viewer engagement.
- i. Create and publish content specifically for digital platforms, such as websites, social media platforms (like Twitter, Facebook, Instagram), and other online formats, adhering to the standards and practices of broadcast journalism.
- j. Critically evaluate news sources, analyze information, and discern bias in news coverage.

Standard 7: Fundamentals of Photography

Students will apply principles of composition, lighting, and visual aesthetics in photography to enhance pre-production planning and narrative development in video projects.

Aligned Credentials: Adobe Premiere Certified Professional, AVID Certified User, Final Cut Pro – Certified Associate

Skills:

- a. Apply the principles of exposure by effectively adjusting aperture, shutter speed, and ISO settings to capture high-quality images.
- b. Describe the components of an exposure value (EV) table and explain how to use it to achieve desired effects, such as depth of field or motion blur, without overexposing or underexposing the image.
- c. Select and adjust the range of f-stops common with most cameras to achieve desired depth of field and exposure.
- d. Describe the use and application of a light meter in determining proper exposure.
- e. Describe how High Dynamic Range imaging (HDR) enhances image quality.
- f. Explain fundamental concepts related to the use of lenses in photography,

including their role in focusing light on the camera sensor and influencing image composition and quality.

- g. Identify and categorize types of lenses commonly used in photography, e.g., normal, wide angle, telephoto, variable zoom, macro, and fisheye, highlighting their distinct characteristics and intended applications.
- h. Identify the distinct types of lens filters, their purpose, and use in controlling image quality or appearance, e.g., polarizing, neutral-density, infrared, ultraviolet, diffusion, tone control, color conversion/compensation, Didymium, and special effects.
- i. Explain the characteristics and applications of special purpose lenses, e.g., swing shift lens, slant-focus lens, pitching lens, and Dynalens.
- j. Explain focal length and its relationship to the physical size of a lens, illustrating how different focal lengths affect the angle of view, magnification, and depth of field in photographs.
- k. Explain the principles of how lenses refract light to focus and control the clarity of images.
- l. Demonstrate how types of lenses and camera positioning influence image framing and perspective in photography.
- m. Explain raster and resolution as it relates to photography, detailing how these concepts affect image quality, detail, and output in both digital and print media contexts.
- n. Identify common image sensors found in a digital camera, e.g., Complimentary Metal-Oxide-Semiconductor (CMOS).
- o. Identify common photo preparation software tools and describe their impact on raw and compressed images, detailing how these tools enhance or alter image quality and detail.
- p. Demonstrate how photo editing tools can be used to make common adjustments to an image, e.g., sizing, cropping, hue/saturation, brightness/contrast, and dodge/burn.
- q. Investigate emerging technologies in photography, such as AI-assisted editing tools and advancements in image sensor technology.

Standard 8: Fundamentals of Audio Production

Students will apply analytical skills to assess production requirements and identify and set up necessary audio equipment.

Aligned Credentials: Adobe Premiere Certified Professional, AVID Certified User, Final Cut Pro – Certified Associate

Skills:

- a. Analyze sound properties, such as frequency, pitch, intensity (amplitude), and timbre to capture and manipulate audio.
- b. Apply measurement units, such as decibels (dB) for sound intensity and hertz (Hz) for frequency, to accurately assess and adjust audio levels and characteristics.
- c. Calculate the difference between frequency, pitch, and intensity relating to the human voice to optimize voice clarity and quality.
- d. Explain frequency response and describe how it impacts the fidelity and accuracy of audio reproduction.
- e. Explain basic acoustics and the importance of sound control to ensure proper sound isolation and reflection management.
- f. Compare, select, and set up different recording devices (recorders, mixers) to meet specific recording requirements.
- g. Identify components and describe the uses of an audio mixer to control and manipulate recording and mixing stages of recording, e.g., input channels, volume controls, trim, equalizer (EQ) controls, pan pots, volume unit (VU) meters, cue channels, submixes, auxiliary channels, and output volume controls.
- h. Demonstrate operation of an audio mixer with multiple sources to ensure proper signal routing and integration.
- i. Compare types of microphones, their pick-up patterns, and applications in a variety of situations, e.g., omni-directional, cardioid, supercardioid, hypercardioid, bi-directional, unidirectional, shotgun, lavalier, and condenser.
- j. Differentiate between microphone and line inputs to optimize signal quality and compatibility.
- k. Explain impedance characteristics of microphones and audio equipment, emphasizing their impact on signal quality and compatibility.
- l. Identify industry standard cabling, assembly, and connection types, e.g., microphone, speaker, lighting, video, rigging, multiwire, adaptors, and

extensions.

- m. Describe proper cable management techniques, e.g., over-under method, tape down cables, and cable deployment.
- n. Identify and select digital recording media devices for storage and management of audio recordings, e.g., hard drives and memory cards.
- o. Explain the differences between balanced and unbalanced cables and signals in maintaining audio integrity over longer distances and in environments susceptible to interference.
- p. Identify characteristics of digital, Amplitude Modulation (AM), Frequency Modulation (FM), and satellite signals.
- q. Demonstrate troubleshooting equipment malfunctions in the studio and on-location for audio productions.

Standard 9: Sound and Audio Recording

Students will apply audio recording techniques for recording clear audio, monitoring and adjusting audio levels, adding background music, incorporating sound effects, and mixing audio tracks.

Aligned Credentials: Adobe Premiere Certified Professional, AVID Certified User, Final Cut Pro – Certified Associate

Skills:

- a. Explain microphone placement in studio and on-location productions to eliminate plosive sounds while announcing and achieving desired sound capture.
- b. Describe breathing techniques for effective announcing, such as diaphragmatic breathing.
- c. Apply vocal techniques used for recording audio, such as enunciation, pacing, and modulation.
- d. Explain how to prepare copy for vocal delivery.
- e. Demonstrate appropriate vocal styles for announcing, such as news reporting, commercial delivery, or other specific contexts or genres where appropriate vocal styles are required.
- f. Select appropriate digital audio format to guarantee high fidelity and compatibility, e.g., mp3, wav, .aiff, or m4a.
- g. Apply adjustments for electrical interference, such as the 60-cycle hum, to

maintain clean audio signals and prevent disruptions in recording quality.

- h. Differentiate between manual and automatic recording levels, enabling adjustment of recording levels based on the specific dynamics of the sound environment.
- i. Demonstrate adjustment to recording levels to ensure optimal audio quality.
- j. Apply basic audio filtering techniques (i.e., banpass/reject, noise-reduction, reverb, digital delay, compressors, expanders) to live and prerecorded audio signals.
- k. Record audio suitable for specific media platforms, such as live, narration, VO, SOT, and VOSOT.
- l. Explain the importance of using natural sound (nat sound) in a production.
- m. Explain the role of a Foley artist and create a Foley audio track for a video or cinema production.

Standard 10: Control Room Equipment

Students will demonstrate their ability to utilize studio and control room equipment effectively in managing data and high-definition video, and integrating with digital workflows for various production needs, including streaming, live events, and digital content creation.

Aligned Credentials: Adobe Premiere Certified Professional, AVID Certified User, Final Cut Pro – Certified Associate

Skills:

- a. Demonstrate use of a camera control unit (CCU) to control and adjust camera settings remotely, such as iris, gain, white balance, and more.
- b. Demonstrate use of the digital lighting control systems to adjust studio and set lighting.
- c. Demonstrate use of a playback/recording device to play back pre-recorded content and record live footage, including digital video recorders (DVRs) and solid-state recorders.
- d. Demonstrate use of an audio mixer to mix and control audio signals from various sources.
- e. Demonstrate the use of a production switcher to seamlessly switch between multiple video sources.

- f. Demonstrate use of a character generator (CG) system for real-time creation and insertion of graphics, lower-thirds, titles, and other text overlays into the video stream.
- g. Demonstrate using a waveform monitor and vectorscope to monitor and analyze video signals for color balance, exposure, and meet technical standards.
- h. Identify and use monitoring equipment, including video monitors, audio monitors, and speakers.
- i. Identify and use various audio/video connectors including HDMI, HD-SDI, XLR, USB, and other connectors for interfacing with cameras, monitors, audio equipment, and external devices.
- j. Identify basic audio connectors including mini, quarter inch, XLR, optical, and RCA, and explain their applications in audio equipment.
- k. Identify basic video connectors, such as Bayonet Neill-Concelman (BNC), F-connector, VGA, DVI, RCA, Y/C (S-Video), and HDMI, and differentiate their uses in video transmission and display technologies.
- l. Identify basic computer/data connectors like USB, Firewire, eSATA, and Thunderbolt, and describe their roles in data transfer and peripheral connectivity.
- m. Differentiate between composite, S-Video, component, and HD/SDI connectors, explaining their respective video signal formats and applications in various audiovisual setups.
- n. Apply the use of an intercom system to facilitate communication between production team members in the control room, on set, and on other locations involved in the production.
- o. Describe use of networking and communication tools including Ethernet switches, routers, and other networking equipment to manage data flow and communications.
- p. Demonstrate use of video conferencing equipment to collaborate remotely, conduct remote interviews, consultations, or broadcast segments.
- q. Explain the use of a UPS (Uninterruptible Power Supply) system and power distribution units.

Standard 11: Production of Cinema and Video

Students will demonstrate proficiency in video production by executing and delivering an engaging video that meets client objectives, targets specific audiences, and adapts seamlessly across various digital platforms.

Aligned Credentials: Adobe Premiere Certified Professional, AVID Certified User, Final Cut Pro – Certified Associate

Skills:

- a. Apply copyright laws and ethical considerations related to using copyrighted materials (music, images, footage) in videos and identify licensed or royalty-free assets.
- b. Reflect, revise, and refine pre-production decisions as needed.
- c. Execute the storyboard which outlines shot sequences and visual concepts.
- d. Compare a single-camera with a multiple-camera production identifying advantages and limitations of each.
- e. Identify and establish a specific point-of-view when shooting from a script.
- f. Explain drop frame and non-drop frame timecode filming and evaluate how to account for both when preparing for an edit.
- g. Demonstrate techniques appropriate to the roles of producer and director, such as disseminating commands and information to cast and crew and executing creative vision.
- h. Execute the specific duties of each production role, including camera operator, sound operator, grip, gaffer, and on-air talent, to ensure effective production.
- i. Demonstrate rehearsing a scene based on a script or screenplay, focusing on character interpretation, blocking, and dialogue delivery.
- j. Demonstrate shooting for the edit e.g., match on action, sequencing, and coverage.
- k. Explain the 180° rule and its application in various cinema scenarios.
- l. Explain the importance of continuity, emphasizing its role in maintaining narrative coherence, visual consistency, and audience engagement.
- m. Analyze methods to evoke emotion from an audience through specific shots.
- n. Demonstrate special effects and visual techniques like slow motion, time-lapse, visual effects (VFX), and practical effects to enhance storytelling and create

visual impact.

- o. Describe various cinematographic methods necessary when shooting scenes that incorporate post-production visual effects.
- p. Explain the importance and use of B-roll footage.
- q. Demonstrate operation of audio equipment during studio or remote production.
- r. Demonstrate operation of a production switcher during a live production.
- s. Demonstrate operation of a character generator during a studio or remote production.

Standard 12: Post-Production Process

Students will demonstrate a comprehensive range of skills and techniques essential for editing and enhancing video content, demonstrating methods to create both rough cuts and refined edits, transforming raw footage into a polished, coherent video that effectively communicates its intended message or story for distribution.

Aligned Credentials: Adobe Premiere Certified Professional, AVID Certified User, Final Cut Pro – Certified Associate

Skills:

- a. Plan and execute the post-production process, including creating an editing schedule, organizing footage, and preparing assets for editing.
- b. Implement backup, recovery, and media redundancy strategies to safeguard media assets and ensure operational continuity.
- c. Explain how media should be labeled to store and access within a database.
- d. Determine if footage meets pre-production storyline goals and create cohesive rough cuts by sorting and organizing raw footage into manageable sequences and clips.
- e. Assemble rough cuts to create an initial timeline by arranging clips based on script or storyboard.
- f. Develop and maintain an edit log or outline of editing to provide a detailed evolution of a project.
- g. Apply timing and pacing techniques to the story timeline.
- h. Demonstrate appropriate methods of setting and adjusting user preferences within a non-linear editing software program.

- i. Apply editing techniques to refine raw footage into a coherent narrative or presentation, including cuts, trims, color corrections, cropping, key framing, chroma key, transitions, compositing, continuity, and fades.
- j. Apply advanced editing techniques, e.g., slip edit, replace edit, and fit-to-fill.
- k. Refine an edited sequence/timeline by adjusting color balance, exposure, contrast, saturation, and applying creative grading techniques to achieve desired visual effects, enhance mood, tone, and ensure visual consistency.
- l. Apply artistic expression and sensation of a story in a soundscape, e.g. Foley, Audio Dialogue Replacement (ADR), sound effects, soundtrack, room tone, NAT sound, and voiceover.
- m. Utilize industry-standard software to integrate motion graphics and animations into videos and create engaging visual effects.
- n. Produce and edit video footage, integrate audio, and optimize the final product for various delivery platforms, including web publication, downloading, streaming, and broadcast.
- o. Apply video encoding standards, select appropriate formats, export settings, codecs, resolutions, and frame rates to ensure quality and compatibility.
- p. Demonstrate how to optimize and save final edited footage in industry-standard formats using appropriate naming conventions.

Standard 13: Basics of Streaming

Students will employ the principles and elements of design, video production, and animation techniques to develop and publish engaging, high-quality streaming content tailored to the needs and preferences of their target audience.

Skills:

- a. Evaluate different types of content suitable for streaming, such as live events, pre-recorded videos, podcasts, and interactive experiences.
- b. Explain how streaming differs from traditional downloading and playback methods.
- c. Develop a plan for organizing streaming content, including scripting and storyboarding.
- d. Apply the principles of multimedia content creation, including video production, audio recording, graphic design, video editing, and storytelling.

- e. Explain the concept of codecs and their role in compressing and decompressing audio and video data.
- f. Compare popular codecs used for streaming, such as H.264, VP9, and AV1 and explain how the choice of codec can impact file size, quality, and compatibility.
- g. Examine common video compression techniques used for streaming, such as spatial compression, temporal compression, and transform coding.
- h. Compare the trade-offs between compression efficiency and video quality.
- i. Examine streaming protocols used for delivering multimedia content over the internet, such as HTTP Live Streaming (HLS), Dynamic Adaptive Streaming over HTTP (DASH), and Real-Time Messaging Protocol (RTMP).
- j. Explain how streaming protocols work and their advantages in different scenarios.
- k. Discuss popular live streaming platforms and their features.
- l. Highlight the importance of optimizing streaming performance for a positive user experience.
- m. Evaluate factors such as video resolution, bitrate, buffering, and latency.
- n. Examine copyright and licensing issues related to streaming content.
- o. Investigate emerging technologies and trends shaping the future of streaming, such as 4K/8K video, virtual reality (VR), and augmented reality (AR).
- p. Discuss the potential impact of technologies like artificial intelligence (AI) and machine learning on streaming content creation and delivery.
- q. Discuss ethical considerations, such as data privacy, consent, and responsible content creation and distribution.

Employability Standards

Standard 14: Employability Skills

Students will understand and demonstrate the roles of professional communication, critical thinking, problem solving, professionalism, teamwork, and collaboration within multimedia production and broadcast careers.

Skills:

- a. Exhibit effective listening skills to accurately interpret and respond to client expectations, audience feedback, and team input.
- b. Collaborate with team members to establish a cohesive vision and workflow for the project to meet client expectations.
- c. Develop innovative solutions to technical and creative problems encountered in multimedia broadcasting and production.
- d. Demonstrate the ability to effectively identify, address, and resolve conflicts in a manner that promotes both team progress and positive team dynamics.

Entrepreneurship Standards

Standard 15: Entrepreneurship

Students will be able to describe opportunities for entrepreneurship and evaluate the value proposition of business ownership and freelancing in the industry.

Skills:

- a. Evaluate the licensing, regulatory, and tax implications of self-employment and business ownership compared to W-2 employment.
- b. Describe the purpose, general responsibilities, and value proposition of a business owner in multimedia production and broadcast-related industries in clear and concise terms.
- c. Develop a unique brand identity that differentiates the business in the competitive multimedia landscape.
- d. Design marketing strategies to promote multimedia content and services, utilizing digital marketing, social media, and traditional advertising.

Digital Literacy Standards

Standard 16: Digital Literacy

Students will be able to demonstrate the use of common software and information technology in a multimedia production and broadcast environment.

Skills:

- a. Demonstrate the ability to collaborate effectively through digital channels, including email, video conferencing, file-sharing platforms, and other messaging applications.
- b. Describe the use of online resources in licensing and professional development as multimedia production and broadcast professional.
- c. Demonstrate the use of common scheduling, resource management, and customer relationship software systems.
- d. Apply strategies for using digital tools and technology to drive business and commerce.

Credentials of Value

Safety Credentials

For this program area, students must (1) be prepared to take and (2) be provided with an opportunity to achieve at least one of the listed Essential Safety Credentials.

For this program area, these are the essential safety credentials:

- [OSHA General Industry](#), OSHA

Essential Credentials

All programs must (1) prepare all students in the program to take, and (2) provide an opportunity for them to achieve at least one essential credential.

Credentials on the essential list are included based on the following criteria:

- The certification must have high-value currency in the market, which can be gained through various processes including transparency initiatives, general awareness, endorsements and validations, regulations, hiring policies and practices, and/or procedures that can be used to translate the credential into academic credit.
- Must lead to improved hiring outcomes and/or increased earnings for students who attain the credential.
- Credentials required for employment in program field must be included.

For this program area, these are the essential credentials:

- [Adobe Premiere Pro Certified Professional](#), Adobe
- [Avid Certified User \(ACU\) - Media Composer](#), Avid Technologies
- [Final Cut Pro Certified Associate](#), Apple

Supplemental Credentials - Postsecondary

Programs may choose to differentiate and expand upon their program by offering additional credentials.

- Credentials listed as Supplemental/Specialized may include:
- Credentials that are endorsed by local or regional industry associations or workforce boards.
- Must be attainable for students in the program who master the competencies outlined in the relevant Career Technical Education Framework such as an advanced/stacked credential above the essentials.
- May be equipment, tool, software or process specific if valued by industry.

For this program area, these are the supplemental credentials:

- [SocialPro](#), Apple
- [VideoPro](#), Apple
- [Post-ProductionPro](#), Apple
- [AVID Certified Professional - Media Composer](#), Avid Technology
- [Color Correction with DaVinci Resolve](#), Blackmagic Design
- [DaVinci Resolve End User](#), Blackmagic Design
- [Video Production and Editing Certificate](#), Berklee Online
- [After Effects CC](#), LinkedIn Learning
- [You Tube Certified](#), You Tube
- [Certified Broadcast Technologist \(CBT\)](#), Society of Broadcast Engineers (SBE)
- [Certified Television Operator \(CTO\)](#), Society of Broadcast Engineers (SBE)
- [Certified Video Engineer \(CEV\)](#), Society of Broadcast Engineers (SBE)
- [Certified Broadcast Networking Technologist \(CBNT\)](#), Society of Broadcast Engineers (SBE)
- [Certified Broadcast Networking Engineer \(CBNE\)](#), Society of Broadcast Engineers (SBE)
- [Certified Audio Engineer \(CEA\)](#), Society of Broadcast Engineers (SBE)
- [Certified Video Engineer \(CEV\)](#), Society of Broadcast Engineers (SBE)
- [Certified Broadcast Radio Engineer \(CBRE\)](#), Society of Broadcast Engineers (SBE)

- [Certified Broadcast Television Engineer \(CBTE\)](#), Society of Broadcast Engineers (SBE)
- [Certified Broadcast Networking Engineer \(CBNE\)](#), Society of Broadcast Engineers (SBE)
- [Certified Senior Radio Engineer \(CSRE\)](#), Society of Broadcast Engineers (SBE)
- [Certified Senior Television Engineer \(CSTE\)](#), Society of Broadcast Engineers (SBE)
- [Certified Professional Broadcast Engineer \(CPBE\)](#), Society of Broadcast Engineers (SBE)
- [Google Analytics Certification](#), Google
- [Google Project Management](#), Google
- [Google Digital Marketing and E-commerce](#), Google
- [Google UX Design](#), Google
- [Google Business Intelligence](#), Google
- [Certified Radio Operator \(CRO\)](#), Federal Communications Commission (FCC)
- [IBM Project Manager](#), IBM