

MEMBER INSTITUTION RESOURCE

Broadcasting Standards Document

A practical guide for NJCAA and Gateway Esports member institutions

FOUNDATION | INSTITUTIONAL | ADVANCED

Technical standards, equipment tiers, staffing, conduct, workflows, and free training resources

Prepared for the 2026-27 program year

Prices checked July 15, 2026. Prices are approximate and may change.

Document Purpose and Use

This document establishes general broadcasting expectations for NJCAA and Gateway Esports member institutions. It is designed to help institutions create broadcasts that are stable, understandable, accurate, visually consistent, and respectful of the participating teams, students, staff, partners, and viewers.

The standards are intentionally scalable. A member institution does not need a professional control room to begin. A dependable computer, a wired network connection, properly configured encoder software, understandable commentary, accurate graphics, and disciplined production habits can create a strong entry-level product. Institutions may then add cameras, hardware switchers, replay, routing, and dedicated production positions as their programs mature.

IMPORTANT This is a standards guide, not a required shopping list.

Products are examples, not exclusive endorsements. Institutions may use equivalent equipment that meets the same functional requirements. Confirm compatibility, procurement rules, warranties, institutional cybersecurity policies, and current vendor pricing before purchase.

Pricing and Link Notes

- Prices are approximate U.S. prices observed or published on July 15, 2026, before tax, shipping, installation, extended warranties, or institutional discounts.
- Sale pricing changes frequently. A listed price is a planning estimate, not a guaranteed quote.
- Links point to manufacturer pages, official documentation, reputable retailers, or free training resources.
- When a category uses a budget range instead of one product, the range reflects a realistic complete setup rather than a single component.

How Standards Are Marked

Marker	Meaning
REQUIRED TO START	The minimum capability needed to produce a responsible live broadcast.
REQUIRED FOR APPROVED INSTITUTIONAL WORKFLOW	A process or quality expectation that should be present whenever an institution represents itself or the association publicly.
RECOMMENDED	Strongly improves reliability, quality, training, or consistency.
ADVANCED	Appropriate for mature programs, dedicated studios, multi-event productions, or national-level work.

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1. Minimum Requirements to Begin Broadcasting

REQUIRED TO START Minimum viable broadcast

An institution may begin broadcasting when it can provide a stable program feed, clear game audio and commentary, accurate team identification, a reliable operator, a backup communication method, and permission to use the game, platform, music, logos, and participant content shown.

1.1 Required Technical Capabilities

- A dedicated or appropriately capable production computer that can run the game feed, graphics, communications, and encoder without sustained overload.
- A wired Ethernet connection for the production computer. Wi-Fi should not be the primary connection for an official match broadcast.
- Encoder/production software, with OBS Studio recommended as the default no-cost starting point.
- A method to acquire the game feed: direct display/game capture, a capture device, SDI, NDI, or another tested IP workflow.
- At least one production display; two displays are the practical minimum for a controlled workflow.
- A monitoring headset so the operator can hear the outgoing program, not only local game audio.
- A microphone for each caster, or a properly managed shared commentary system.
- A communication channel for the producer, observer, casters, and event contacts that is separate from the public broadcast.
- A speed test and sustained upload capacity with adequate headroom for the selected stream bitrate.
- A local program recording whenever storage and platform rules allow it.
- A scene, slate, or holding graphic that can be used when gameplay cannot be shown.

1.2 Required Personnel Capabilities

- One person must be explicitly designated as the producer or person in charge of the live show.
- The observer must know the game spectator tools and be able to follow action without distracting or disorienting the viewer.
- The caster team must be prepared, pronounce names correctly, avoid prohibited language, and clearly distinguish confirmed facts from speculation.
- At least one person must monitor the actual public program feed and platform health, even if that responsibility is combined with another role.
- All staff and students must understand escalation procedures for technical failures, inappropriate behavior, confidential information, and participant safety concerns.

1.3 Minimum Visual and Audio Product

Area	Minimum acceptable standard
Video	720p60 is the fallback minimum. 1080p60 is the normal target. Gameplay must be readable and free from avoidable cropping or stretched aspect ratios.
Audio	Commentary must be intelligible, game audio controlled beneath voices, and no persistent clipping, echo, hum, or feedback should be present.
Graphics	Correct event, team, and match identification; readable score/state information when available; a starting/holding/technical-difficulty slate.
Continuity	No long unexplained black screens or dead air. The producer should use slates, music cleared for use, or brief commentary to preserve context.
Accuracy	Names, scores, records, sponsors, and results must be verified before display or announcement.
Conduct	The product must remain respectful, inclusive, and suitable for institutional audiences.

1.4 Start-Up Decision Test

- Can viewers always tell what match they are watching?
- Can viewers clearly hear and understand the casters?
- Can the producer immediately replace a broken or private feed with a safe holding source?
- Can the production continue if one student loses connection?
- Does the team know who makes final decisions during the show?
- Has the institution confirmed rights and permissions for all visible and audible material?

If the answer to any of these questions is no, the production should remain in rehearsal or private-test mode until the issue is resolved.

2. Quality Levels and Reference Systems

2.1 Foundation Broadcast

Best for a new program, student club, single match, or early training environment. The goal is not complexity; the goal is reliability and clear storytelling.

- OBS Studio on a capable computer
- Direct game capture or one reliable USB capture input
- Two production displays
- Two commentator microphones or broadcast headsets
- One producer/technical operator, one observer, and one or two casters
- Simple branded opening, matchup, score, break, and closing graphics
- Local program recording and a written preflight checklist

Typical planning range: \$1,500-\$4,000 when the institution already owns gaming computers and network service. A new dedicated computer can raise the total to approximately \$3,000-\$6,000.

2.2 Institutional Broadcast

Best for weekly matches, program recruitment, recurring conference play, campus events, and broadcasts regularly promoted by the institution.

- Dedicated production computer with hardware encoding
- Multiple game or camera sources
- Managed wired network and documented IP/source naming
- Hardware or software multiview
- Dedicated audio monitoring and separate caster mixes when possible
- Producer, technical director, observer, casters, graphics/replay support
- Consistent show package, run of show, sponsor inventory, and archival process
- Backup encoder configuration and spare cables/adapters

Typical planning range: \$8,000-\$25,000 depending on the number of sources, cameras, microphones, and whether the facility uses HDMI, SDI, or NDI.

2.3 Advanced / Studio Broadcast

Best for high-volume production, multiple simultaneous matches, national events, formal studio programming, advanced replay, or institutional media departments.

- Separate production, graphics, replay, audio, and engineering workstations
- SDI and/or managed 10GbE production network
- Professional switcher, router, multiview, intercom, tally, and monitoring
- Isolated recordings of key sources and redundant program recording
- Dedicated producer, director/technical director, engineer, A1, graphics, replay, observer, camera, and talent teams
- Calibrated monitoring, acoustic treatment, controlled lighting, backup power, and serviceable cable infrastructure
- Formal asset management, access control, maintenance, and incident documentation

Typical planning range: \$35,000-\$150,000+, depending on room construction, cameras, routing scale, replay, networking, and labor. Institutions should use a systems integrator for permanent SDI, fiber, SMPTE 2110, or complex intercom installations.

2.4 Complexity Rule

STANDARD Never add a source or feature that the team cannot rehearse and recover.

A simpler production that remains stable is more professional than an advanced production that repeatedly loses audio, shows incorrect graphics, or exposes private communications. Every new camera, replay channel, remote guest, NDI source, or automation should have an owner, a test plan, and a fallback.

3. Definitions and Core Terms

Term	Definition
A1 / Audio Engineer	The person responsible for microphones, game audio, music, communications, levels, and the outgoing audio mix.
Bitrate	The amount of data used per second to encode audio or video. Higher bitrate can improve quality but requires more upload bandwidth.
CBR	Constant Bitrate. A streaming rate-control method that aims to maintain a consistent data rate and is commonly required by live platforms.
Clean Feed	A video or audio source without added graphics, commentary, or other program elements.
Codec	A method used to encode and decode media, such as H.264, H.265/HEVC, AV1, or AAC.
Color Caster	The analyst who explains strategy, context, statistics, and the reasons behind play.
Confidence Monitor	A display visible to talent that shows program, timing, notes, or another reference source.
Downstream Key / DSK	A graphic layer placed near the end of the video chain, often used for bugs, lower thirds, or sponsor graphics.
Dropped Frames	Video frames that fail to reach the streaming service, generally because of network congestion or encoding overload.
Encoder	Software or hardware that compresses the program into a format suitable for streaming or recording.
Genlock / Reference	A timing signal used to synchronize professional video devices and reduce switching or timing problems.
IFB	Interruptible Foldback. An audio feed to talent that can include program sound and private producer instructions.
ISO Recording	An isolated recording of an individual source in addition to the final program recording.
Keyframe Interval	How frequently a complete video frame is sent. Major platforms commonly expect a two-second interval for live streaming.
Lower Third	An on-screen graphic, usually near the lower portion of the frame, that identifies a person, team, topic, or statistic.
LUFS	A loudness measurement designed to represent perceived volume over time.
Multiview	A display showing multiple sources, preview, program, audio meters, and status information at once.
NDI	A network video technology used to send video, audio, and metadata over IP networks.
Observer	The in-game camera operator who selects the spectator view and follows the competitive action.
Play-by-Play Caster	The real-time narrator who describes immediate action and drives pace.
Program / PGM	The final feed that the audience sees and hears.
Preview / PVW	The source prepared to go live next on a traditional preview/program switcher.
Return Feed	Video or audio sent back to a remote participant, caster, camera operator, or venue.
RTMP / RTMPS	Common protocols used to deliver an encoded stream to a streaming platform. RTMPS adds encrypted transport.
Run of Show / Rundown	The timed or ordered plan for show segments, cues, graphics, breaks, and responsibilities.

Term	Definition
Safe Area	An on-screen area where essential text and graphics are kept away from edges or platform overlays.
SDI	Serial Digital Interface. A professional video connection carried over 75-ohm coaxial cable with locking BNC connectors.
SRT	Secure Reliable Transport. A protocol designed for resilient low-latency video contribution over unpredictable networks.
Tally	A visual indicator showing which camera or source is on-air or in preview.
Technical Director / TD	The operator who switches sources, executes transitions, keys graphics, and follows the director or producer.
True Peak / dBTP	A measurement of digital audio peaks that estimates peaks between samples.
Video Router	A matrix device that sends any input to one or more outputs without repatching cables.

4. Technical Delivery Standards

4.1 Standard Output Profiles

Profile	Resolution / FPS	Video	Audio	Use
Preferred	1920x1080 at 60 fps	H.264; CBR; 4,500-6,000 Kbps; 2-second keyframes	AAC; stereo; 48 kHz; 160-320 Kbps	Normal NJCAA/Gateway match target.
Bandwidth fallback	1280x720 at 60 fps	H.264; CBR; 3,500-4,500 Kbps; 2-second keyframes	AAC; stereo; 48 kHz; 160-192 Kbps	Use when stable 1080p60 cannot be maintained.
Low-bandwidth emergency	1280x720 at 30 fps	H.264; CBR; 2,500-3,500 Kbps; 2-second keyframes	AAC; stereo; 48 kHz; 128-160 Kbps	Temporary continuity option, not the planned standard.
Local master	1920x1080 at 60 fps or higher	High-quality H.264/H.265/ProRes/DNxHR based on workflow	48 kHz PCM or high-bitrate AAC	Archival, highlights, review, and postproduction.

Platform requirements change. Before each season, verify the current ingest guidance for the institution's platform and account configuration.

YouTube Live encoder settings: <https://support.google.com/youtube/answer/2853702?hl=en> - Official current resolution, bitrate, codec, and keyframe guidance.

Twitch broadcasting guidelines: https://help.twitch.tv/s/article/broadcasting-guidelines?language=en_US - Official ingest and broadcast guidance.

4.2 Network Standard

- Use wired Ethernet from the production computer to the network. Disable automatic switching to Wi-Fi during production.
- For internet streaming, sustained available upload should be at least twice the selected total stream bitrate; three times is preferred when the connection is shared or unpredictable.
- Perform a sustained test, not only a one-second speed test. Watch packet loss, latency changes, and dropped frames.
- Place production video traffic on a documented network segment whenever possible. Coordinate with campus IT before creating unmanaged switches, VLANs, static addresses, multicast, or firewall exceptions.
- Do not combine high-bandwidth NDI traffic and public internet delivery on an unplanned consumer Wi-Fi network.
- Label switch ports, cable paths, and IP sources. Keep a current network diagram and IP address list.
- Use Cat6 or better for new permanent copper runs, and follow campus cabling and fire-code standards.

4.3 Audio Standard

- All speech must remain intelligible on common headphones, laptop speakers, and mobile devices.
- Target approximately -16 to -14 LUFS integrated for the complete web program when practical, with true peaks at or below -1 dBTP.
- Normal speech peaks should generally remain between approximately -12 and -6 dBFS before final limiting. Persistent red meters or audible distortion are unacceptable.
- Commentary should lead the mix. Game audio supports the story but should not mask words.
- Use high-pass filtering, light compression, and limiting only when the operator understands the settings. Heavy noise removal can create metallic or pumping artifacts.
- Monitor the outgoing program and, when possible, a return from the public platform. Local monitoring alone can miss routing and synchronization errors.
- Mute open microphones during private conversations, breaks, or troubleshooting. Never assume a source is off-air.

4.4 Video Standard

- Use 16:9 framing and avoid stretched, squeezed, or unintentionally cropped gameplay.

- Use 59.94 or 60 fps consistently for fast esports action. Avoid mixing 30 and 60 fps unless the switcher or software performs reliable conversion.
- For cameras, lock or coordinate white balance, exposure, shutter, and color so shots match. Auto exposure and auto white balance should not visibly change during a shot.
- Keep essential text within a conservative title-safe area. Account for platform controls, chat overlays, captions, and mobile viewing.
- Do not display passwords, account emails, private Discord channels, direct messages, unreleased brackets, student records, or administrative dashboards.
- Use a technical-difficulty slate instead of leaving a broken source on-air.

4.5 Recording and Archival Standard

- Record the final program locally whenever practical. Confirm the recording path and free space before going live.
- Advanced productions should record clean or isolated feeds for important sources, especially gameplay, caster cameras, and program audio.
- Use a consistent folder structure: Season > Event > Date > Match > Program / ISO / Graphics / Audio / Documents.
- Use descriptive filenames that include date, game title, teams, match number, and version.
- Protect recordings according to institutional retention, student privacy, licensing, and records-management policies.
- After each show, verify that recordings open correctly before deleting temporary or source media.

5. Encoder and Production Software

RECOMMENDED DEFAULT OBS Studio

OBS Studio is the recommended starting encoder for most member institutions because it is free, open source, widely supported, and capable of professional 1080p60 production when configured and operated correctly.

Tier / Option	Approx. U.S. Price	Difficulty	Recommended Use, Product Link, and Free Training
Foundation / Required	\$0	Easy to moderate	OBS Studio. Best default for new and established institutional broadcasts; supports scenes, sources, browser graphics, hardware encoding, recording, replay buffer, and plugins. Product / information Official OBS Quick Start
Institutional	\$60 Basic HD; \$350 HD; \$700 4K	Moderate to advanced	vMix. Windows-based live production platform suited to larger input counts, replay, NDI, remote guests, scripting, and integrated graphics. Product / information Official vMix training videos
Advanced	\$1,200 Pro or \$50/month Max	Advanced	vMix Pro / Max. Best when advanced replay, multiple external outputs, ISO recording, scripting, and high input counts are required. Product / information vMix feature comparison and learning
Alternative	\$499/year	Moderate	Wirecast Pro. Paid Mac/Windows alternative for institutions that prefer its interface, guest workflow, or existing Telestream ecosystem. Product / information Wirecast support and tutorials

5.1 OBS Configuration Standard

- Create separate scene collections for each game title or production package. Do not build every season into one uncontrolled scene collection.
- Use descriptive source names such as GAME_A_CLEAN, CASTER_1_CAM, SCOREBUG, MUSIC_BREAK, and PGM_RETURN.
- Prefer hardware encoding (such as NVIDIA NVENC, Intel Quick Sync, AMD AMF, or Apple VideoToolbox) when supported and tested.
- Run OBS as the only primary encoder on the production computer unless the system has been tested under full load.
- Keep the OBS Stats window visible or accessible. Monitor rendering lag, encoding lag, dropped frames, CPU/GPU usage, and disk space.
- Use Studio Mode for controlled preview/program transitions whenever staffing and screen space allow it.
- Lock source positions after layout approval to reduce accidental movement.
- Export or back up scene collections and profiles before major changes or system updates.
- Disable or remove unused plugins. Third-party plugins should be documented, approved, and tested after each update.
- Do not update OBS, GPU drivers, capture drivers, NDI components, or plugins immediately before a scheduled broadcast.

OBS download: <https://obsproject.com/download> - Official downloads for Windows, macOS, and Linux.

OBS hardware encoding guide: <https://obsproject.com/kb/hardware-encoding> - Explains NVENC, AMF, Quick Sync, and VideoToolbox.

5.2 Software Difficulty Scale

Rating	Expected operator skill
Easy	Can be learned through a guided setup and checklist; limited routing or automation.
Moderate	Requires scene/source planning, audio routing, troubleshooting, and repeated rehearsal.

Rating	Expected operator skill
Advanced	Requires deliberate system design, networking, replay, scripting, redundancy, or dedicated engineering support.

5.3 Supporting Software

Use	Suggested tools	Cost / Notes	Free learning
Postproduction	DaVinci Resolve	Free version available; Studio version is a paid upgrade.	https://www.blackmagicdesign.com/products/davinciresolve/training
Network video	NDI Tools	Free. Includes Studio Monitor and screen capture utilities.	https://docs.ndi.video/all/using-ndi/ndi-tools
Graphics	OBS browser sources, vMix GT, Canva, Adobe, Affinity, or institutional design tools	Use approved templates, fonts, and brand assets. Costs vary.	https://obsproject.com/kb/browser-source
Communication	Institution-approved voice/chat platform	Do not expose private channels on-air; use accounts managed under institutional policy.	Use the selected platform's official safety and administration guides.

6. Signal Acquisition: Wired and NDI

6.1 Physical Wired Feed Options

REQUIRED PRINCIPLE Use a tested, labeled signal path

Every gameplay or camera source must have a known route from source to production, a known format and frame rate, and a fallback plan. Avoid improvised splitters, unpowered adapters, and unknown cable lengths during a live show.

Tier / Option	Approx. U.S. Price	Difficulty	Recommended Use, Product Link, and Free Training
Lowest practical	\$100-\$200 per source	Easy	Short HDMI + USB capture. Best when the source and production computer are in the same room and within a short, controlled cable run. Example: Elgato Cam Link 4K or equivalent UVC capture. Product / information Cam Link Quick Start and requirements
Recommended	\$175-\$500 per source	Moderate	HDMI/SDI capture and conversion. Use a dedicated capture device such as Blackmagic Express Recorder 3G or a reliable PCIe capture card. For long runs, convert HDMI to 3G-SDI at the source and capture SDI at production. Product / information Blackmagic capture/playback support
Advanced	\$579-\$1,500+ per chassis	Advanced	Multi-input PCIe capture. DeckLink Duo 2, Quad HDMI Recorder, Quad 2, Magewell, or equivalent multi-input hardware. Requires PCIe lane planning, cooling, driver management, and format control. Product / information DeckLink manual and setup

6.2 HDMI Rules

- Use certified cables and keep passive HDMI runs short. Test the exact resolution, frame rate, color format, HDCP behavior, and cable length.
- Do not assume a laptop or GPU port can simultaneously feed a player monitor and production without affecting refresh rate, HDR, variable refresh, or performance. Test cloned and extended-display workflows.
- Avoid consumer splitters unless they have been tested for EDID, resolution conversion, and power-loss behavior.
- Secure cables so a player, caster, or operator cannot pull a connector from a computer.
- Disable HDR unless the complete chain is designed for HDR. Standard productions should remain Rec. 709 SDR.

6.3 SDI Rules

- Use 75-ohm BNC video cable, not generic 50-ohm RF cable.
- Match cable and converter capability to the signal: 3G-SDI for 1080p60; 12G-SDI for 2160p60.
- Use locking power and strain relief for converters. Label both ends of every cable.
- Confirm Level A/Level B compatibility where applicable and use standards conversion if devices do not agree.
- For permanent runs, use qualified AV/low-voltage installation and test the completed path.

Blackmagic Micro Converters: <https://www.blackmagicdesign.com/products/microconverters> - 3G and 12G HDMI/SDI conversion options; models begin around \$79.

6.4 NDI Feed Pulling Options

NDI can reduce dedicated video cabling by carrying video and audio over a network. It is powerful, but it is not “free bandwidth.” A successful NDI workflow requires coordinated networking, source naming, access control, capacity planning, and monitoring.

Tier / Option	Approx. U.S. Price	Difficulty	Recommended Use, Product Link, and Free Training
Starter	\$0 software; \$50-\$150 network gear	Moderate	NDI Tools + existing managed Gigabit Ethernet. Use for one or two tested 1080p sources on a controlled wired network. NDI Screen Capture or Screen Capture HX can send game or desktop feeds. Product / information NDI Tools documentation
Institutional	\$300-\$1,500 network budget	Moderate to advanced	Dedicated production switch / VLAN. Use managed Gigabit or 2.5GbE switching, documented multicast settings, QoS where appropriate, and separate production traffic from general campus congestion. Product / information NDI bandwidth planning
Advanced	\$2,000-\$15,000+	Advanced	10GbE core, redundant links, hardware NDI endpoints. For many simultaneous sources, studios, or centralized facilities. Requires campus IT/AV design, monitoring, redundancy, and service documentation. Product / information NDI network guidance

6.5 NDI Operating Rules

- Use wired connections for NDI contribution and production reception.
- Name each source with institution, room, device, content, and primary/backup status.
- Disable or restrict discovery across networks that should not see production sources.
- Estimate bandwidth before adding sources. Full-bandwidth NDI and compressed NDI HX have different network and latency characteristics.
- Test audio sync, frame rate, color, and latency through the complete path.
- Keep NDI runtime/tools versions documented and consistent across managed systems.
- Do not allow public or student-managed devices to publish unapproved NDI sources onto a production network.

7. Equipment Standards and Purchasing Tiers

The following tables provide at least three planning tiers for each major category. “High-end” does not mean every institution should purchase the most expensive item. Select the lowest tier that reliably supports the institution’s approved workflow, staffing, and maintenance capability.

7.1 Production Computers

Tier / Option	Approx. U.S. Price	Difficulty	Recommended Use, Product Link, and Free Training
Foundation	\$1,000-\$1,500	Moderate	6+ core modern CPU; 16 GB RAM minimum, 32 GB preferred; dedicated GPU with hardware encoder; 1 TB NVMe; Gigabit Ethernet. Appropriate for OBS, one to three 1080p sources, basic browser graphics, and program recording. Do not use an underpowered office PC solely because it is available. Product / information OBS hardware encoding guide
Institutional	\$1,800-\$3,500	Moderate	8+ core CPU; 32-64 GB RAM; RTX x070-class or better hardware encoder; 2 TB NVMe plus recording storage; 2.5GbE; Thunderbolt or PCIe expansion. Appropriate for multiple captures, NDI, cameras, replay buffer, local recording, and recurring shows. Product / information vMix reference system guidance
Advanced	\$4,000-\$8,000+	Advanced	High-core-count CPU; 64-128 GB RAM; RTX x080-class or professional GPU; multiple NVMe drives; 10GbE; capture cards; redundant program recording. Appropriate for vMix Pro, multi-channel replay, ISO recording, many NDI/SDI sources, and advanced outputs. Use a vendor or integrator that supports live-production workloads. Product / information 2025-26 vMix laptop guidance

REQUIRED Dedicated performance testing

Before approval, run the full show configuration for at least the expected match duration while recording and streaming privately. A five-minute test does not reveal heat, memory, disk, driver, or long-duration network problems.

7.2 Monitors

Tier / Option	Approx. U.S. Price	Difficulty	Recommended Use, Product Link, and Free Training
Budget	\$170 each	Easy	Dell P2425H 24-inch 1080p IPS or equivalent. Use two displays: one for production controls and one for multiview/program/communications. Product / information Windows multi-monitor setup
Recommended	\$349-\$399	Easy	ASUS ProArt PA279CRV 27-inch 4K or equivalent. Use for a larger production interface, graphics review, and more accurate color than an entry office display. Product / information ASUS ProArt support
Advanced	\$1,495	Advanced	Blackmagic SmartView 4K G3. Dedicated 12G-SDI/SMPTE 2110 program monitor with monitoring tools. Appropriate for racks and formal control rooms, not necessary for a starter setup. Product / information SmartView manual

7.3 Headsets

Tier / Option	Approx. U.S. Price	Difficulty	Recommended Use, Product Link, and Free Training
Budget	\$35-\$50	Easy	Logitech H390 USB headset or equivalent. For production assistants, remote coordination, or basic student training. Not preferred for primary on-air talent in noisy rooms. Product / information Logitech support
Recommended	\$120	Easy	Logitech G Pro X wired headset or equivalent. Useful for observers and production operators who need closed-back monitoring and a boom mic. Product / information G Pro X support
High-end	\$249-\$330	Moderate	Audio-Technica ATH-M50xSTS-USB or Beyerdynamic MMX 330 Pro. For primary on-air or critical monitoring where an integrated headset workflow is preferred. Product / information ATH-M50xSTS-USB manual

7.4 Keyboards and Control Surfaces

Tier / Option	Approx. U.S. Price	Difficulty	Recommended Use, Product Link, and Free Training
Budget	\$13	Easy	Logitech K120 wired keyboard. Reliable, inexpensive keyboard for a production station. Quiet keys are preferred near open microphones. Product / information Logitech support
Recommended	\$130	Easy	Logitech MX Keys S. Low-profile, quiet full-size keyboard for graphics, production, and administrative work. Wired operation or a documented wireless policy is recommended for critical events. Product / information MX Keys S setup
Advanced	\$230-\$350	Moderate	X-keys XK-60 or Elgato Stream Deck XL / Plus XL. Dedicated buttons reduce mouse travel and allow labeled macros, scene changes, replay cues, graphics, and emergency actions. Every macro must be documented and rehearsed. Product / information X-keys setup resources

7.5 Cameras: Players, Casters, and Studios

Tier / Option	Approx. U.S. Price	Difficulty	Recommended Use, Product Link, and Free Training
Budget	\$60-\$70	Easy	Logitech C920s 1080p webcam. Suitable for caster or player reaction shots in controlled lighting. Use 1080p30 where appropriate and frame consistently. Product / information C920s quick-start guide
Recommended	\$140-\$200	Easy to moderate	Elgato Facecam MK.2 or Facecam 4K. Provides 1080p60 or higher-quality USB video and manual controls. Pair with proper lighting and lock exposure/white balance. Product / information Facecam Quick Start
Advanced	\$1,999+	Advanced	PTZOptics Move 4K 12x or equivalent SDI/NDI PTZ camera. For studios, stages, presenter shots, and remote-controlled positions. Requires PoE+, network configuration, presets, and an operator. Product / information Move 4K five-minute start

Camera Operating Standard

- Lighting quality and placement usually improve a webcam image more than purchasing a higher-resolution camera.

- Frame headroom and eyeline consistently. Avoid wide shots that show clutter, confidential material, or uninvolved students.
- Lock exposure and white balance after setup. Match cameras before air.
- Use privacy indicators and physical procedures so participants know when cameras are live or recording.
- Obtain institutional approval and any required releases before showing students, minors, guests, or private spaces.

7.6 Microphones and Audio Interfaces

Tier / Option	Approx. U.S. Price	Difficulty	Recommended Use, Product Link, and Free Training
Budget	\$100	Easy	Samson Q2U Recording & Podcasting Pack. Dynamic USB/XLR microphone with stand and cables. Good starter mic because it can begin on USB and later move to an XLR interface. Product / information Q2U setup guide
Recommended	\$299	Easy to moderate	Shure MV7+ USB/XLR microphone. Strong institutional choice for close-mic speech, onboard processing, USB simplicity, and future XLR use. Product / information MV7+ user guide
High-end	\$680-\$950 per position	Moderate to advanced	Shure SM7B (\$439) + Focusrite Scarlett 2i2 (\$239.99) + arm/cable. Professional dynamic mic chain. Requires gain staging, interface routing, physical mounting, and acoustic control. Budget may include a clean-gain device depending on interface and voice. Product / information SM7B user guide

Focusrite Scarlett 2i2: <https://focusrite.com/products/scarlett-2i2> - Current listed price approximately \$239.99; includes two microphone inputs.

Scarlett 2i2 user guide: <https://userguides.focusrite.com/hc/en-gb/sections/19640363031570-Scarlett-2i2-4th-Gen-User-Guide>

7.7 Video Switchers

Tier / Option	Approx. U.S. Price	Difficulty	Recommended Use, Product Link, and Free Training
Foundation	\$345	Easy to moderate	Blackmagic ATEM Mini Pro. Four HDMI inputs, hardware streaming, recording, multiview, and USB webcam output. Useful for small caster-camera or studio setups. Product / information ATEM Mini Getting Started
Institutional	\$1,225	Moderate	Blackmagic ATEM Mini Extreme. Eight HDMI inputs and expanded multiview/output capability. Appropriate for larger HDMI-based studio systems. Product / information ATEM manual and software
Advanced	\$2,965-\$7,695	Advanced	ATEM Television Studio HD8 / ISO / 4K8. Integrated professional control panel, SDI inputs, streaming, recording, talkback, multiview, and more. Select HD, ISO, storage, or 4K based on actual workflow. Product / information Television Studio Getting Started

7.8 Video Routers

Tier / Option	Approx. U.S. Price	Difficulty	Recommended Use, Product Link, and Free Training
Small facility	\$1,545	Advanced	Blackmagic Videohub 10x10 12G. Routes up to 10 SDI sources to 10 destinations. Useful when a facility has more destinations than a single switcher can serve. Product / information Videohub workflow and setup

Tier / Option	Approx. U.S. Price	Difficulty	Recommended Use, Product Link, and Free Training
Medium facility	\$2,709	Advanced	Blackmagic Videohub 20x20 12G. Provides room for switchers, recorders, monitors, replay, and confidence feeds in a growing control room. Product / information Videohub support
Large facility	\$4,445+	Advanced	Blackmagic Videohub 40x40 12G or larger. For centralized studios, multi-room routing, redundancy, and many destinations. Requires documentation, permissions, and engineering ownership. Product / information Videohub support

NOT REQUIRED TO START A router is infrastructure, not a quality shortcut.

Do not buy a video router until the institution has enough repeatable sources and destinations to justify it. Unlabeled routing can put the wrong match, private feed, or unapproved content on-air.

7.9 Multiviewers

Tier / Option	Approx. U.S. Price	Difficulty	Recommended Use, Product Link, and Free Training
Budget hardware	\$235	Moderate	Blackmagic MultiView 4 HD. Four HD-SDI inputs displayed on one HDMI/SDI monitor. Useful when the switcher or software does not provide enough multiview. Product / information MultiView support
Recommended	\$689	Moderate	Blackmagic MultiView 4. Four 6G-SDI inputs for higher-resolution or mixed-facility monitoring. Product / information MultiView support
Advanced	\$1,935	Advanced	Blackmagic MultiView 16. Sixteen sources on one or two displays. Appropriate for larger production control rooms. Product / information MultiView support

7.10 Teleprompters

Tier / Option	Approx. U.S. Price	Difficulty	Recommended Use, Product Link, and Free Training
Budget	\$99	Easy	Glide Gear TMP 50 or equivalent phone prompter. Useful for short scripted intros, recruitment messages, and presenter training. Requires a compatible phone and app. Product / information Basic teleprompter setup principles
Recommended	\$199	Moderate	Glide Gear TMP 100. Tablet/phone prompter with a longer reading distance. Suitable for studio announcements and host segments. Product / information TMP 100 setup resources
Advanced	\$599.99	Moderate	Elgato Prompter XL. Integrated 15.6-inch display for a dedicated presenter or studio workflow. Requires supported computer connections, mounting, and scripted operation. Product / information Elgato Prompter support

Teleprompters are optional. They should support natural delivery, not encourage talent to read dense paragraphs without understanding the material. Use short sentences, pronunciation marks, pauses, and stage directions.

7.11 Acoustic Treatment

Tier / Option	Approx. U.S. Price	Difficulty	Recommended Use, Product Link, and Free Training
Lowest-cost	\$50-\$200	Easy	Room arrangement, rugs, curtains, bookcases, and moving blankets. Reduce hard parallel reflections, move microphones closer, and place the caster away from walls and loud computers. This improves room sound but does not soundproof the room. Product / information Audimute acoustic treatment education
Recommended	\$400-\$1,200	Moderate	Portable absorption sheets or fabric-wrapped panels. Treat first-reflection points behind and beside casters. Use tested fire-rated products where required by campus policy. Product / information Audimute room analysis
Advanced	\$900-\$3,000+	Moderate to advanced	GIK acoustic room kit or professionally designed treatment. For dedicated studios, use measured placement of broadband panels, corner treatment, and ceiling clouds. Construction isolation requires a building professional and is separate from acoustic absorption. Product / information GIK acoustic planning tools

DEFINITION Treatment is not soundproofing.

Absorption reduces echo and improves intelligibility inside a room. Soundproofing limits sound transmission between rooms and normally requires construction, mass, sealing, isolation, and professional design.

7.12 Additional Strongly Recommended Categories

Category	Foundation	Institutional	Advanced
Lighting	\$100-\$250: two dimmable LED panels	\$400-\$1,200: key/fill/background fixtures with stands and soft diffusion	\$2,000+: controlled grid, DMX, rigging, and professionally installed power
Network	\$50-\$150: managed Gigabit switch	\$300-\$1,500: managed 1/2.5/10GbE production switching	\$2,000-\$15,000+: redundant 10GbE core and monitored AV network
UPS / power	\$100-\$250: line-interactive UPS for production PC and network	\$500-\$1,500: separate UPS units, power conditioning, and labeled circuits	\$2,000+: rack UPS, monitored PDUs, generator coordination, redundant power paths
Storage	\$100-\$250: 2-4 TB external SSD/HDD	\$500-\$1,500: dedicated recording SSDs plus managed archive	\$3,000+: NAS/SAN, 10GbE, backup, permissions, and retention policy
Cabling / spares	\$100-\$300: tested spare HDMI, USB, Ethernet, adapters	\$500-\$2,000: labeled kits, SDI, converters, testers, patching	\$3,000+: permanent infrastructure, fiber, patch panels, and test equipment

8. Broadcast Roles and Staffing Models

Role	Primary responsibility
Executive Producer / Program Lead	Owns program goals, institutional approvals, budget, staffing standards, partner obligations, and long-term quality.
Producer	Leads the specific show, approves content, controls the rundown, makes final live decisions, and communicates with event leadership.
Director	Calls camera/source changes, graphics, replay, transitions, and timing. May be combined with producer on smaller shows.
Technical Director / Switcher Operator	Executes source changes, keys, transitions, macros, and technical cues.
Broadcast Engineer / EIC	Designs and troubleshoots signal flow, computers, network, sync, recording, and redundancy.
Stream / Encoder Operator	Manages platform ingest, encoder health, bitrate, recording, platform metadata, and public-feed monitoring.
Observer	Operates the in-game spectator camera and selects views that accurately show the action.
Play-by-Play Caster	Narrates immediate action, identifies major events, controls pace, and creates accessible continuity.
Color Caster / Analyst	Explains strategy, context, mechanics, statistics, and likely implications without overwhelming the play-by-play.
Host / Desk Talent	Introduces the show, guides segments, interviews guests, handles transitions, and maintains context during delays.
Audio Engineer / A1	Mixes microphones, game audio, music, remote feeds, IFB, communications, and final loudness.
Graphics Operator	Builds and triggers lower thirds, scoreboards, statistics, sponsor elements, brackets, and slates.
Graphics Assistant	Prepares, checks, names, and organizes graphics and data before and during the show.
Replay Operator	Marks, selects, trims, and plays replays while protecting the live show from spoilers or incorrect clips.
Camera Operator	Frames and operates physical player, caster, host, venue, or crowd cameras.
PTZ Operator / Shader	Runs camera presets and movement; may also match exposure and color across cameras.
Production Assistant	Supports documents, cues, timing, communication, media movement, guest coordination, and other assigned production tasks.
Stage / Studio Manager	Maintains quiet, safety, talent readiness, microphone status, camera awareness, and physical cues in the studio.
Statistician / Researcher	Verifies rosters, pronunciations, records, rules, storylines, and approved statistics.
Clip / Social Producer	Creates approved highlights and social assets without interfering with the live production path.
Quality Control / Compliance Monitor	Watches program accuracy, audio/video quality, privacy, sponsor execution, and policy compliance; records issues for correction.

8.1 Minimum Staffing Models

Model	Suggested staffing	Limitations
Training / private test	1 operator + 1 observer + 1-2 casters	Not recommended for a promoted public show unless the operator can also monitor program and communications.
Foundation public broadcast	Producer/TD/encoder; observer; play-by-play; color; optional graphics/PA	Roles may be combined, but the producer should not also cast. A public-feed monitor must be assigned.
Institutional	Producer; director/TD; encoder/QC; observer; two casters; graphics; audio or PA; optional replay	Good target for weekly program broadcasts. Allows better separation of creative and technical responsibilities.
Advanced	Executive producer; producer; director; TD; engineer; encoder; A1; graphics; replay; observer; cameras; host/casters; stage manager; QC	Appropriate for national events, studio shows, and productions with complex partner or sponsor obligations.

8.2 Role Assignment Rules

- Every position must know who has final authority. During the live show, the producer's safety and editorial decision is final unless superseded by institutional leadership or emergency personnel.
- Do not assign a student to an advanced role solely because the equipment is available. Training and rehearsal come first.
- Combined roles must be explicitly documented. Avoid combinations that create conflicts, such as producer plus on-air caster, or sole audio operator plus remote guest coordinator.
- Each critical role must have a backup person, written recovery steps, or a simplified fallback workflow.
- Students should receive feedback privately and constructively after the show, not through public criticism or uncontrolled live comms.

9. Pre-Production and Show Planning

9.1 Required Pre-Production Information

- Event name, game title, match format, platform, date, time zone, call time, estimated end time
- Participating institutions, official team names, abbreviations, logos, colors, rosters, handles, pronunciations, and records
- Competition rules, lobby settings, observer access, delay policy, pause policy, forfeit procedures, and escalation contacts
- Approved sponsors, required reads, prohibited categories, placement requirements, and duration/frequency commitments
- Music, video, image, game, logo, and participant permissions
- Platform title, description, tags, thumbnail, access credentials, moderation plan, and archival setting
- Run of show, graphics list, replay plan, camera plan, audio plan, and technical fallback plan
- Contact list for producer, event administrator, platform support, campus IT, and emergency/security personnel

9.2 Planning Timeline

Timing	Required actions
4+ weeks before	Confirm scope, rights, venue/network, staffing, equipment, game title, platform, sponsors, and budget.
2 weeks before	Collect team assets and rosters; draft rundown; assign roles; conduct system test; identify missing hardware or permissions.
1 week before	Rehearse full workflow; validate graphics; test remote contributors; confirm commentary research and pronunciation.
48 hours before	Freeze nonessential software changes; confirm call sheet; verify platform event; charge/update devices; pack spares.
Day of show	Complete preflight, communications check, signal check, rehearsal, platform test, recording test, and final editorial briefing.
After show	Verify recording, save logs, correct metadata, archive assets, collect issues, and conduct a brief review.

9.3 Run of Show Example

Relative time	Segment	Video / Graphics	Audio / Talent	Owner
-30:00	Public holding	Event loop, schedule, sponsor rotation	Cleared music; periodic host update	Producer / TD
-05:00	Countdown	Countdown + matchup	Music rises; casters ready	TD / A1
00:00	Open	Show open, event ID, caster two-shot	Host/casters welcome, format, stakes	Producer / Talent
03:00	Match intro	Team logos, rosters, bracket	Storylines and keys to match	Graphics / Casters
05:00	Game start	Gameplay + scorebug	Play-by-play and analysis	Observer / Casters
Game end	Result	Winner graphic, stats, replay	Immediate reaction and analysis	Producer / Replay
Between games	Break	Countdown, schedule, sponsor	Cleared music or desk segment	Producer / TD
Final	Close	Final result, next event, credits	Summary, thanks, next broadcast	Producer / Talent

9.4 Asset Standards

- Use official logos supplied by the institution or association. Do not redraw, stretch, recolor, or add effects without approval.
- Build graphics at the production resolution and preserve source files.
- Use readable fonts, high contrast, and concise text. Avoid tiny statistics that cannot be read on mobile.
- Create a naming standard and version control. Example: GAME_TEAM_A_ROSTER_v03_APPROVED.png.
- Verify every name and score before air. A graphics operator should read the live output, not only the data-entry screen.
- Prepare safe slates: starting soon, short delay, technical difficulty, match concluded, and broadcast ended.
- Do not use copyrighted music, images, video, fonts, or broadcast footage without permission or a valid license.

10. Studio Etiquette and Safety

10.1 General Studio Etiquette

- Treat every microphone and camera as live unless a designated operator confirms otherwise.
- Use quiet voices and minimize movement near open microphones. Phones should be silent and notifications disabled.
- Do not eat over consoles, keyboards, switchers, interfaces, or exposed cabling. Drinks must be in closed containers and kept away from equipment.
- Do not change routing, scenes, profiles, gain, network settings, cables, or device power without informing the person in charge.
- Do not invite unapproved visitors into the control room or studio during production.
- Keep pathways, exits, electrical panels, and fire equipment clear. Tape and cover cables according to campus safety practice.
- Use hearing-safe monitoring levels. Headsets should not be used at excessive volume to overcome a loud room.
- Respect personal space, accessibility needs, pronouns, and accommodations.
- Store bags, coats, and personal equipment outside operational areas.
- After use, return equipment, sanitize shared headsets/microphones where appropriate, coil cables correctly, and report damage.

10.2 On-Comm Etiquette

- Use short, clear, role-based communication. Identify the person first when a cue could be ambiguous.
- Acknowledge important instructions with “copy,” “stand by,” or a concise confirmation.
- Do not argue on production communications. Raise the immediate safety or accuracy issue, follow the producer’s direction, and review the disagreement after air.
- Keep jokes, unrelated conversation, and criticism off production channels.
- Do not discuss private student, team, disciplinary, health, eligibility, or personnel information on comms.
- Use a separate emergency or administrative channel when sensitive information must be shared.
- When speaking to talent during live commentary, give the shortest instruction necessary and avoid talking over critical play.

10.3 Studio Safety Rules

- Only trained personnel may rig overhead fixtures, climb ladders, alter electrical distribution, or work inside equipment racks.
- Secure stands and tripods with appropriate weights or safety measures.
- Never defeat grounding, overload power strips, daisy-chain extension cords improperly, or block ventilation.
- Maintain clear emergency shutdown procedures and know who can contact campus security, emergency services, or facilities.
- Report overheating, electrical smell, damaged cables, liquid exposure, battery swelling, sparks, or unstable equipment immediately.
- Permanent construction, acoustic isolation, electrical work, and structural mounting require qualified campus personnel or contractors.

11. Caster Standards

CORE PURPOSE Explain, guide, and elevate the match.

Casting should help a viewer understand what is happening, why it matters, and what may happen next. Energy must support the action rather than compete with it.

11.1 Preparation Requirements

- Review the rules, format, teams, rosters, player names, pronunciations, records, recent results, and relevant storylines.
- Confirm preferred names and pronouns. Do not guess pronunciation on-air when it can be verified in advance.
- Prepare concise notes, not a script for every moment. Live commentary should respond naturally to the match.
- Identify stakes: standings, elimination, qualification, rivalry, rematch, debut, or milestone. Do not invent stakes for drama.
- Meet with the co-caster before air to assign play-by-play/color responsibilities, handoffs, terminology, and interruption expectations.
- Test microphone, monitoring, communication, camera framing, lighting, and return audio.
- Know the producer's pause, delay, emergency, sponsor-read, and sign-off procedures.

11.2 Play-by-Play Standard

- Prioritize the decisive action, objective, player, and result. Do not narrate every animation or repeat the same point.
- Use clear names and verbs. Help listeners follow without seeing every detail.
- Match energy to significance. Constant shouting removes contrast and fatigues the audience.
- Leave space for game audio, the analyst, and important moments. Silence can be appropriate.
- Reset the state after chaotic action: score, objective status, remaining players/resources, and what comes next.
- Use accurate game terminology, but briefly explain specialized terms for new viewers when time permits.
- Avoid predicting a result as certain until it is actually secured.

11.3 Color / Analyst Standard

- Explain why a play succeeded or failed, what resources were traded, and how the decision affects the next phase.
- Use statistics only when they are accurate, timely, and relevant. A number should support a point, not replace analysis.
- Do not overtalk active play. Yield when immediate action requires the play-by-play caster.
- Offer multiple plausible interpretations when intent cannot be confirmed. Distinguish observation from speculation.
- Avoid belittling players. Analyze the decision and available information, not a student's character, intelligence, or worth.
- Prepare short explanations for recurring mechanics, economy, map control, draft choices, and win conditions.
- Help the play-by-play caster reset and transition after intense action.

11.4 Duo Chemistry and Handoffs

- Use verbal and visual cues to pass control. Finish thoughts cleanly and avoid competing for the same sentence.
- Do not correct a partner harshly on-air. Correct material facts briefly and professionally, then continue.
- Avoid private jokes, inside references, or banter that excludes the audience.
- Balance participation. One caster should not monopolize long stretches unless the format calls for it.
- During downtime, move through a prepared ladder: current state, previous turning point, strategic adjustment, player/team story, rules explanation, upcoming schedule, then production-approved filler.

11.5 Language and Conduct Rules

- No discriminatory, harassing, sexual, threatening, demeaning, or profane language.
- Do not mock accents, names, physical appearance, disability, identity, institution, location, or background.
- Do not disclose private information, unconfirmed disciplinary matters, eligibility issues, health information, direct messages, or internal disputes.
- Do not make accusations of cheating, intentional misconduct, or rule violations unless officially confirmed and approved for announcement.

- Do not promote gambling, substance use, weapons, or other restricted content contrary to institutional or association policy.
- Avoid political, religious, or unrelated controversial commentary unless it is directly necessary to explain an officially approved event matter.
- Do not claim to speak for the NJCAA, Gateway Esports, a member institution, game publisher, or partner beyond approved language.
- If an error occurs, correct it briefly: state the correct information, avoid defensiveness, and continue.

11.6 Caster Voice and Microphone Technique

- Place a dynamic microphone approximately 2-6 inches from the mouth, slightly off-axis, with consistent posture.
- Speak across the microphone rather than directly into it when plosives are a problem. Use a pop filter or windscreen.
- Avoid touching the desk, boom arm, cable, or microphone during live commentary.
- Maintain water nearby in a closed container and use breaks to rest the voice.
- Warm up articulation and pronunciation before air. Do not force a voice style that causes strain.
- Monitor at a safe volume and request mix corrections rather than removing one earcup or shouting over the game.

11.7 Free Caster Training

Color and Play-by-Play: Do's and Don'ts of Effective Esports Casting:

<https://www.youtube.com/watch?v=jk8Gc7UFetc> - Free video focused on role distinctions and caster synergy.

Tips for Beginner Esports Casters: <https://raidiant.gg/tips-for-beginner-esports-casters-ft-darlyn-gompers-diaz/> - Practical preparation and co-caster guidance.

Practice method: cast recorded VODs: <https://esportsdash.com/blog/couch-to-cast-commentate-like-a-pro> - Use muted match footage, record commentary, review, and repeat.

12. Observer, Camera, Graphics, Audio, and Replay Standards

12.1 Observer Standards

- Know spectator controls, map tools, player identifiers, objective timings, replay controls, and game-specific restrictions before air.
- Prioritize information and story: active fights, objective setup, rotations, economy/resources, substitutions, and decisive player perspectives.
- Avoid rapid, unnecessary cuts that disorient the viewer. Use wide or map views to establish location before close action.
- Do not reveal information the intended audience should not see. Follow delay, fog-of-war, anti-stream-sniping, and publisher rules.
- Coordinate with casters. When analysis references a player or objective, show the relevant view when it does not compromise more important action.
- During pauses, use approved neutral views. Do not search private menus, chats, or player information.
- Record missed moments for post-show review without blaming the observer publicly.

12.2 Physical Camera Standards

- Establish shot purpose: caster two-shot, player reaction, host, venue, crowd, interview, or detail.
- Use stable framing and intentional movement. Do not pan or zoom without a destination.
- Protect privacy. Do not point cameras at paperwork, screens, credentials, locker/changing areas, or uninvolved people.
- Follow tally and director cues. Assume the camera may be live even when tally is not visible.
- Match white balance, exposure, and frame rate across cameras before air.
- Use clean backgrounds, approved signage, and safe cable paths.

12.3 Graphics Standards

- Accuracy overrides speed. Verify names, team identity, scores, seeds, records, and sponsor spelling.
- Use official logos and approved brand colors. Maintain aspect ratio and clear space.
- Keep essential text large enough for mobile viewing. Use high contrast and avoid overly thin fonts.
- Use consistent animation timing. Graphics should enter and leave cleanly without covering decisive action.
- Clearly label replays, highlights, archived footage, simulations, or unofficial statistics.
- Do not place sponsor graphics in a way that implies endorsement beyond the approved agreement.
- Maintain an operator checklist for opening titles, lower thirds, scorebug, roster, maps, break, delay, results, schedule, sponsors, and credits.

12.4 Audio Operator Standards

- Line-check every source and confirm that left/right routing is intentional.
- Use separate channels for each caster where possible. Avoid combining microphones before the production mixer if independent control is available.
- Set gain at the source, then use faders for mix balance. Do not fix poor gain staging only with a limiter.
- Maintain mix-minus or echo-control paths for remote contributors.
- Keep a safe mute or emergency source available. Know how to remove an open or inappropriate microphone instantly.
- Track game audio changes between menus, gameplay, victory screens, and ads.
- Monitor the public return periodically for lip sync, routing, and loudness.

12.5 Replay Standards

- Replay must support understanding, not interrupt live action.
- Mark the start and end of clips carefully. Avoid replaying private chat, player credentials, or unapproved content.
- Use a replay transition or label so viewers know the image is not live.
- Do not replay graphic injury, distress, inappropriate gestures, or harmful content without editorial approval.
- Prepare to abandon a replay immediately when live action resumes.
- For competitive integrity, consider whether replay or observer information could reveal protected strategic information to participants or venue displays.

13. Professionalism and Public Representation

13.1 Expectations for Every Role

- Arrive at the assigned call time, prepared and appropriately dressed for the role and camera plan.
- Respond to production communication promptly and clearly.
- Follow approved chain of command and escalation procedures.
- Protect credentials, access links, unpublished assets, internal communications, and participant information.
- Disclose conflicts of interest, team relationships, or competitive affiliations that could affect assignment or perceived neutrality.
- Do not consume alcohol, intoxicants, or impairing substances before or during production.
- Do not livestream, record, screenshot, or post behind-the-scenes material without approval.
- Do not use institutional equipment for unauthorized personal streams, mining, downloads, or unrelated accounts.
- Accept coaching professionally. Performance review should focus on behavior, execution, and improvement, not humiliation.
- Report errors and damage promptly. Concealing a problem usually increases risk and cost.

13.2 Neutrality and Competitive Integrity

- Official broadcasts should present both institutions respectfully and avoid home-team favoritism unless the production is clearly identified as a team-specific broadcast.
- Casters and graphics should not reveal protected information, coach communications, unannounced substitutions, or private lobby details.
- Do not accept instructions from players, coaches, donors, sponsors, or viewers that conflict with the producer or event administrator.
- Correct score or result disputes only after confirmation from the designated competition authority.
- Maintain the required stream delay and access controls.

13.3 Accessibility and Inclusion

- Use readable fonts, high contrast, and meaningful labels rather than color alone.
- Provide captions when available and ensure speech is clear enough for automated captioning.
- Pronounce names respectfully and use verified names/pronouns.
- Avoid flashing graphics, rapid strobing, or unnecessary motion that could affect viewers.
- Describe important visual context through commentary without narrating every detail.
- Plan reasonable accommodations for students and volunteers with disabilities in coordination with the institution.

13.4 Error Response

Issue	Immediate response	After the show
Incorrect name/score	Correct it concisely when confirmed; update the graphic; avoid blaming an individual.	Document source of error and add a verification step.
Profanity/inappropriate comment	Mute or remove source; use delay controls if available; producer determines return.	Preserve incident details, notify leadership, and review conduct policy.
Private information shown	Cut to safe source immediately; remove clip/VOD access if required; notify leadership.	Follow institutional privacy and incident-response procedures.
Audio failure	Move to backup mic, caster, or holding source; communicate status to viewers if delay is material.	Inspect routing, cable, device, driver, and checklist.
Video/stream failure	Use slate or backup encoder; preserve local recording; coordinate with event administration.	Collect logs and test under the same conditions before next show.

14. Live Show Workflow and Checklists

14.1 Preflight Checklist

- ☐ Producer, event administrator, competition contact, and campus IT contacts confirmed.
- ☐ Rundown, call sheet, roster, pronunciation guide, rules, sponsor copy, and emergency notes distributed.
- ☐ Production computer restarted and nonessential applications closed.
- ☐ Operating system, encoder, drivers, plugins, and game client unchanged since the last approved test unless specifically tested.
- ☐ Internet and production network tested; wired connection active; Wi-Fi disabled for primary production where practical.
- ☐ All sources named, visible, framed, synchronized, and routed correctly.
- ☐ All microphones line-checked; game, music, alerts, remote feeds, and communications verified.
- ☐ Program audio monitored from encoder and public return.
- ☐ Starting, break, technical-difficulty, results, and end slates loaded.
- ☐ Scoreboard, team names, logos, colors, rosters, and sponsor graphics verified.
- ☐ Recording path and free disk space verified; test recording opened and reviewed.
- ☐ Platform event title, privacy, thumbnail, category, tags, delay, DVR, chat, moderation, and ingest server verified.
- ☐ Backup stream key/configuration stored securely and accessible to authorized staff.
- ☐ Power supplies secured; batteries charged; spare cables/adapters/headsets available.
- ☐ All crew briefed on private information, prohibited language, escalation, and emergency cues.
- ☐ Private test sent for at least 10 minutes at full show load before public air.

14.2 Live Monitoring Checklist

- ☐ Public program picture and audio
- ☐ Encoder rendering/encoding lag
- ☐ Network dropped frames and bitrate stability
- ☐ Platform health warnings
- ☐ Audio meters, clipping, noise, echo, and sync
- ☐ Score, timer, team identity, and graphics accuracy
- ☐ Recording status and disk space
- ☐ Crew communications and talent return
- ☐ Chat/moderation issues
- ☐ Competitive-integrity delay and protected information
- ☐ Sponsor obligations and required reads
- ☐ Next segment readiness and fallback source

14.3 Post-Show Checklist

- ☐ End the program deliberately; confirm the public stream has stopped before private conversation.
- ☐ Stop and verify all recordings. Open files and check duration, picture, and audio.
- ☐ Save replay marks, project files, graphics data, logs, and incident notes.
- ☐ Return platform metadata and VOD visibility to the approved setting.
- ☐ Archive or transfer media using the institutional folder structure.
- ☐ Sign out or secure shared accounts and stream keys.
- ☐ Power down devices in the approved order; inspect and return equipment.
- ☐ Record technical and editorial issues while details are fresh.
- ☐ Conduct a 10-15 minute review: what worked, what failed, one action owner per improvement.
- ☐ Escalate privacy, conduct, safety, rights, or equipment incidents through institutional procedures.

14.4 Standard Cue Language

Cue	Meaning
Stand by [role/action]	Prepare, but do not execute yet.
Take [source]	Put the named source on program immediately.
Ready [source]	Prepare the source in preview or confirm it is available.
Go [action]	Execute the previously prepared action now.
Clear	Action or source is complete; return to normal state.
Hold	Do not continue the planned action until released.
Kill / Mute [source]	Remove the named audio/video source immediately.
Stretch	Extend the current segment with approved material.
Wrap	Conclude the current thought or segment promptly.
Copy	Instruction heard and understood.

15. Troubleshooting and Contingency Planning

15.1 Failure Priority

1. Protect people and private information.
2. Protect competitive integrity and event administration.
3. Preserve clear audio and viewer context.
4. Preserve the public stream or move to a safe slate.
5. Preserve local recordings and logs.
6. Restore advanced features only after the stable core product is working.

15.2 Troubleshooting Matrix

Problem	Immediate action	Important note
Dropped network frames	Cut unnecessary streams; confirm wired path; check campus congestion; lower bitrate/resolution only if stable at the new profile; move to backup connection if approved.	Do not repeatedly stop/start without coordination. Preserve logs.
Encoding/rendering lag	Remove high-load browser sources/filters; reduce scene complexity; close nonessential applications; use hardware encoder; switch to backup profile/computer.	GPU overload can occur even when CPU use is low.
Black capture source	Check source power, cable, input selection, HDCP, resolution, frame rate, USB bandwidth, and driver. Move to safe slate during diagnosis.	Power-cycle one device at a time and note the result.
Audio echo	Identify duplicate monitoring, open speakers, multiple capture paths, or remote return. Mute suspected path, restore one source at a time.	Use headphones and mix-minus for remote talent.
Audio/video out of sync	Confirm where delay occurs; test local capture, encoder, and platform separately; apply measured sync offset only after source cause is understood.	Document offsets per device and frame rate.
NDI source missing	Check source application, network/VLAN, discovery, firewall, version, and source name; verify in NDI Studio Monitor.	Do not open discovery broadly as a quick fix on a campus network.
Caster disconnects	Producer informs remaining caster; move to single-caster mode or break; reconnect through backup link/device.	Keep a short delay script and backup communication method.
Observer disconnects	Move to approved static/map/secondary observer feed; communicate delay to event admin; avoid showing player POV that violates rules.	Train a backup observer when possible.
Incorrect graphic	Take graphic off-air; confirm data; correct and reinsert; state correction if viewers may be confused.	Add source verification and approval step.
Platform outage	Continue local recording; move to alternate platform only if pre-approved; notify event administration and audience through approved channels.	Do not expose stream keys or credentials during recovery.

15.3 Required Fallback Assets

- Starting soon / holding loop
- Short delay
- Technical difficulty
- Audio-only or commentary desk scene
- Static matchup / schedule
- Emergency clean source with no private information
- Broadcast concluded / final result
- Backup encoder profile and stream destination
- Printed or offline contact list and rundown

15.4 Change Management

- Maintain a known-good production profile and a dated backup.

- Document updates, plugin versions, capture drivers, NDI runtime, firmware, and major scene changes.
- Test updates in a duplicate environment or private rehearsal before production.
- Freeze nonessential changes at least 48 hours before a major broadcast.
- After a failure, change one variable at a time so the team can identify the actual cause.

16. How to Get Started: Training Path

16.1 Four-Week Launch Plan

Week	Objective	Deliverable
Week 1: Signal and OBS	Install OBS; create scenes; capture gameplay; configure 1080p60/720p60 profiles; route audio; record locally.	A 15-minute private recording with clean gameplay, commentary, slate, and closing.
Week 2: Roles and communication	Assign producer, observer, play-by-play, color, and graphics/PA; practice cue language and handoffs.	A 30-minute rehearsal using a written rundown and post-show review.
Week 3: Full private show	Add team assets, score/state graphics, public-feed monitoring, platform test, and failure drills.	A complete private match simulation with one planned failure and recovery.
Week 4: Limited public launch	Broadcast a lower-risk event with simplified scenes, assigned QC, and backup plan.	Published broadcast, archived recording, issue log, and three prioritized improvements.

16.2 Required Starter Training Links

OBS Studio Quick Start Guide: <https://obsproject.com/kb/quick-start-guide> - Set up Auto-Configuration, sources, audio, recording, and streaming.

OBS Hardware Encoding: <https://obsproject.com/kb/hardware-encoding> - Choose NVENC, AMF, Quick Sync, or VideoToolbox appropriately.

OBS Official YouTube Channel: <https://www.youtube.com/@OBSPProject> - Free official videos and release guidance.

vMix Training Videos: <https://www.vmix.com/support/training-videos.aspx> - Official lessons for inputs, streaming, recording, replay, titles, audio, and NDI.

NDI Tools Documentation: <https://docs.ndi.video/all/using-ndi/ndi-tools> - Install and use Studio Monitor, Screen Capture, webcam, router, and related tools.

NDI Bandwidth Guide: <https://docs.ndi.video/all/getting-started/white-paper/bandwidth> - Plan source counts and network capacity.

ATEM Mini Getting Started: <https://www.blackmagicdesign.com/products/atemmini/gettingstarted> - Connect sources, multiview, stream, record, and use ATEM Software Control.

DaVinci Resolve Training: <https://www.blackmagicdesign.com/products/davinciresolve/training> - Free official editing, audio, color, and visual-effects training.

PTZOptics Move 4K Start: <https://downloads.ptzoptics.com/docs/move-4k> - Connect, discover, control, save presets, and configure NDI/SDI/HDMI.

YouTube Live Encoder Settings: <https://support.google.com/youtube/answer/2853702?hl=en> - Current platform ingest settings.

Twitch Broadcasting Guidelines: https://help.twitch.tv/s/article/broadcasting-guidelines?language=en_US - Current Twitch broadcast guidance.

Esports Casting: Play-by-Play and Color: <https://www.youtube.com/watch?v=jk8Gc7UFetc> - Free role and chemistry training.

Beginner Caster Tips: <https://raidiant.gg/tips-for-beginner-esports-casters-ft-darlyn-gompers-diaz/> - Preparation, networking, and co-caster practice.

16.3 Skill Sign-Offs

Skill	Foundation sign-off	Advanced sign-off
Encoder	Builds scenes, routes audio, records, streams privately, reads stats.	Recovers from encoding/network failure and maintains backups.
Observer	Uses spectator tools and follows normal action.	Anticipates strategy, supports replay, and handles multiple game states.

Skill	Foundation sign-off	Advanced sign-off
Caster	Prepares, uses correct names, balances roles, maintains conduct.	Handles delays, interviews, complex analysis, and producer cues naturally.
Graphics	Builds accurate basic lower thirds and score graphics.	Runs data-driven packages, sponsor rotations, and version control.
Audio	Sets clean gain and balances voices/game.	Builds mix-minus, processes speech, manages IFB, and meets loudness targets.
TD / Director	Switches cleanly and follows a rundown.	Calls and executes replay, cameras, graphics, routing, and recovery.

17. Example Budgets and Shopping Lists

These examples are planning models. They intentionally exclude computers or network services the institution already owns. Quotes should include tax, shipping, warranty, spare units, mounts, cable management, and institutional support.

17.1 Minimal Responsible Broadcast

Item	Planning amount	Notes
OBS Studio	\$0	Primary encoder and production software.
Production computer	\$1,200	Foundation specification with hardware encoder.
Two monitors	\$340	Two budget 24-inch displays.
Two Q2U microphone packs	\$200	Two caster positions.
Two monitoring headsets	\$100	Operator/observer and backup.
Capture / cable / adapters	\$200	One game feed and tested spares.
Lighting / basic acoustic control	\$250	Two LED panels plus portable absorption/room adjustments.
UPS and spare storage	\$250	Protect production computer/network and record locally.
Cables, labels, safety supplies	\$160	Ethernet, USB, HDMI, cable covers, labels, ties.
Estimated total	\$2,700	Approximately \$1,500 if a capable computer and displays already exist.

17.2 Recommended Institutional Broadcast

Item	Planning amount	Notes
Production computer	\$2,500	32-64 GB RAM, capable GPU encoder, 2.5GbE, 2 TB NVMe.
Three monitors	\$1,000	Production UI, multiview/program, communications/data.
Four MV7+ microphones / arms	\$1,500	Two primary, host/guest, and spare/flexible position.
Audio interface / mixer / cabling	\$800	Independent microphone control and monitoring.
ATEM Mini Extreme	\$1,225	Eight HDMI inputs for cameras/studio sources.
Two caster cameras + lighting	\$800	Manual-control webcams and soft lights.
Capture / converters / SDI or HDMI kit	\$1,500	Game feeds, backup, tested long-run solution.
Managed network and NDI budget	\$1,000	Production switch, 2.5/10GbE uplinks as needed.
UPS / storage / spares	\$1,500	Backup power, recording media, cables, adapters.
Acoustic treatment	\$1,000	Portable/professional absorption appropriate to room.
Estimated total	\$12,825	Labor, furniture, construction, and internet service excluded.

17.3 Advanced Studio

System area	Planning range	Typical scope
Production, replay, graphics, audio computers	\$15,000-\$35,000	Separate workstations, capture, storage, software, support.
Switcher, router, multiview, monitoring	\$12,000-\$30,000	SDI/4K switching, routing, program/reference displays.
Cameras, lenses, supports, lighting	\$10,000-\$35,000	PTZ or studio cameras, controllers, fixtures, rigging.
Audio, intercom, IFB, microphones	\$8,000-\$25,000	Dedicated mixer, stage boxes, comms, talent positions.
Network, storage, backup, power	\$10,000-\$30,000	10GbE, NAS, UPS, monitored infrastructure, redundancy.
Room treatment, furniture, integration	\$15,000-\$75,000+	Acoustic design, desks, racks, electrical, cabling, labor.
Illustrative total	\$70,000-\$230,000+	Obtain professional design and institutional bids.

17.4 Buying Priorities

7. Reliability and support
8. Clean microphones and controlled audio
9. Wired network and tested signal acquisition
10. Production computer headroom
11. Monitoring and backup recording
12. Lighting and room acoustics
13. Workflow controls and spare equipment
14. Additional cameras, replay, routing, and advanced automation

18. Appendices and Resource Directory

Appendix A: Show File Structure

- 01_ADMIN - call sheet, contacts, permissions, sponsor copy
- 02_RUNDOWN - run of show, cue sheet, scripts, pronunciation
- 03_GRAPHICS - source, approved exports, fonts/licenses
- 04_VIDEO - opens, bumps, packages, approved footage
- 05_AUDIO - music licenses, stingers, voiceovers
- 06_RECORDINGS - program, clean feed, ISO, audio
- 07_REPLAY_CLIPS - approved replay exports
- 08_LOGS - encoder, platform, network, incident, issue list
- 09_DELIVERABLES - final VOD, clips, thumbnails, captions

Appendix B: Source Naming Standard

Use a consistent pattern: LOCATION_DEVICE_CONTENT_VARIANT. Examples:

- ARENA_PC01_GAME_A_CLEAN
- STUDIO_CAM01_HOST_WIDE
- REMOTE_CASTER02_CAMERA
- GFX_SCOREBUG_LIVE
- AUDIO_MUSIC_BREAK
- PGM_PRIMARY
- PGM_BACKUP
- NDI_NJCAA_ROOM2_OBSERVER

Appendix C: Student Evaluation Rubric

Area	Developing	Meets standard	Advanced
Preparation	Missing research or incomplete technical check.	Prepared notes/assets and completed checks.	Anticipates scenarios and supports others.
Execution	Frequent missed cues or avoidable errors.	Reliable, accurate, and responsive.	Consistent under pressure and recovers smoothly.
Communication	Unclear, excessive, or unprofessional.	Concise, respectful, and role appropriate.	Improves team awareness and decision-making.
Technical quality	Unstable or poorly monitored.	Meets video/audio/recording standards.	Optimizes quality and identifies root causes.
Professionalism	Late, unprepared, or disregards policy.	Punctual, coachable, and protects information.	Models standards and mentors peers.

Appendix D: Primary Product and Training Links

OBS Studio: <https://obsproject.com/>

OBS Quick Start: <https://obsproject.com/kb/quick-start-guide>

OBS Hardware Encoding: <https://obsproject.com/kb/hardware-encoding>

vMix Pricing: <https://www.vmix.com/purchase/>

vMix Training: <https://www.vmix.com/support/training-videos.aspx>

Wirecast: <https://www.wirecast.io/en/>

NDI Tools: <https://ndi.video/tools/>

NDI Documentation: <https://docs.ndi.video/>

Blackmagic ATEM Mini: <https://www.blackmagicdesign.com/products/atemmini>

Blackmagic ATEM Television Studio: <https://www.blackmagicdesign.com/products/atemtelevisionstudio/>

Blackmagic DeckLink: <https://www.blackmagicdesign.com/products/decklink/models>

Blackmagic Micro Converters: <https://www.blackmagicdesign.com/products/microconverters>

Blackmagic Videohub: <https://www.blackmagicdesign.com/products/blackmagicvideohub>

Blackmagic MultiView: <https://www.blackmagicdesign.com/products/multiview>

Blackmagic SmartView 4K: <https://www.blackmagicdesign.com/products/smartview4k>

DaVinci Resolve Training: <https://www.blackmagicdesign.com/products/davinciresolve/training>

PTZOptics Move 4K: <https://ptzoptics.com/move-4k/>

Shure MV7+ Guide: <https://www.shure.com/en-US/docs/guide/MV7plus>

Shure SM7B Guide: <https://www.shure.com/en-US/docs/guide/SM7B>

Focusrite Scarlett 2i2 Guide: <https://userguides.focusrite.com/hc/en-gb/sections/19640363031570-Scarlett-2i2-4th-Gen-User-Guide>

GIK Acoustic Tools: <https://www.gikacoustics.com/pages/tools>

Audimute Product Information: <https://www.audimute.com/product-information>

YouTube Live Encoder Settings: <https://support.google.com/youtube/answer/2853702?hl=en>

Twitch Broadcasting Guidelines: https://help.twitch.tv/s/article/broadcasting-guidelines?language=en_US

Appendix E: Annual Review Checklist

- ☐ Review NJCAA and Gateway Esports branding, competition, and broadcast requirements.
- ☐ Verify platform ingest settings, account security, stream keys, moderation, and rights.
- ☐ Update software, drivers, firmware, plugins, and documentation in a controlled test window.
- ☐ Retest every capture path, NDI source, camera, microphone, switcher input, router path, and recording destination.
- ☐ Audit spare equipment, batteries, cables, adapters, labels, and warranties.
- ☐ Review staff/student permissions, role sign-offs, safety procedures, and incident contacts.
- ☐ Update rosters, templates, sponsor inventory, music licenses, and retention rules.
- ☐ Run a complete private rehearsal before the first promoted broadcast.

Document Administration

Field	Value
Document title	NJCAA and Gateway Esports Broadcasting Standards Document
Version	1.0
Publication date	July 15, 2026
Intended audience	NJCAA and Gateway Esports member institutions, staff, students, volunteers, and approved production partners
Recommended review cycle	Annually and whenever platform, partner, competition, branding, safety, or technical requirements materially change
Price reference date	July 15, 2026; all prices approximate

CLOSING STANDARD Build quality through repeatable habits.

Professional broadcasting is not defined only by expensive equipment. It is defined by preparation, clear authority, verified information, respectful talent, stable signal paths, disciplined audio, useful pictures, safe operations, and a team that can recover when something fails.