

Lighting Design

Level: 3

Career Cluster: Media Arts

Program: Media Production and Broadcasting

Pathway: Cinematography and Film/Video Production

Course Catalog Description

Focuses on digitally based lighting design for theatrical, studio, and film/video production using lighting theory, safety practices, digital documentation, visualization software, and production workflow. Students create digital lighting concepts and paperwork while safely installing, programming, operating, and maintaining lighting equipment and control systems.

Summary

Focuses on digitally based lighting design for theatrical, studio, and film/video production, with emphasis on safety, professional practice, lighting theory, electrical systems, digital documentation, and production workflow. Students explore career pathways and industry expectations while analyzing scripts, storyboards, shot lists, and production needs to develop effective lighting concepts using digital planning and visualization tools. Through hands-on application, students use color, intensity, direction, and quality of light to support mood, storytelling, continuity, and audience perception. They also create digital lighting plots, schedules, hook-ups, cue documentation, and visualizations; safely install, program, operate, strike, and maintain lighting equipment; and collaborate with production teams using industry-standard digital workflows in live and recorded environments.

Notes

The updated course reflects a clear shift from a traditional, theatre-focused lighting curriculum to a more advanced, digitally integrated and industry-aligned program. The original course emphasized foundational lighting concepts such as color theory, basic electrical knowledge, equipment use, and hands-on tasks like hanging, focusing, and programming lighting for productions. In contrast, the revised course expands these foundations by incorporating digital workflows, including CAD-based documentation, visualization tools, and digitally programmed lighting systems, while also strengthening connections to film and media production contexts. Additionally, the new course introduces structured components such as portfolio development, leadership, work-based learning, and a formal final assessment project, significantly enhancing career readiness and alignment with modern CTE expectations. Overall, the revision modernizes the course by integrating technology, emphasizing professional practices, and supporting real-world application beyond traditional stage production.

Student Learning Outcomes

1. Career Exploration and Postsecondary Opportunities

Objective: *Students will explore and evaluate career pathways in digitally based lighting design and cinematography for film, video, and theatrical production by examining professional roles, digital tools, work environments, ethical and legal responsibilities, certifications, professional organizations, and Colorado postsecondary education options to make informed academic and career decisions.*

- 1) Identify employment opportunities in various fields with a focus in the area of cinematography and film/video production
 - a. Recognize the work typically performed, digital tools and technology used, and nature of work environments
 - b. Identify potential certifications within the careers
 - c. Find membership organizations associated with the careers
 - d. Understand the necessary education associated within the careers
- 2) Define professionalism within the context of cinematography and film/video production
 - a. Criticism and evaluation
 - b. Presentation
 - c. Assessment
- 3) Recognize laws, regulations, and ethics significant to the fields of cinematography and film/video production
- 4) Identify postsecondary opportunities offered in the state of Colorado
 - a. Technical college, community college, 4-year institutions
 - b. Certificates, associates, bachelor, and advanced degree opportunities

2. Safety, Professional Practice and Crew Responsibilities

Objective: *Students will apply professional safety practices and collaborative crew responsibilities by following industry-standard safety protocols, properly using lighting and production equipment, understanding team roles, collaborating with production personnel, and evaluating personal adherence to professional and safety expectations.*

- 5) Apply industry-standard safety practices, including proper use of Personal Protective Equipment (PPE), to all lighting and production activities.
- 6) Demonstrate safe and correct operation of lighting, grip, and technical production equipment.
- 7) Analyze safety protocols for theatrical, studio, and on-location production environments and explain their importance.
- 8) Differentiate the roles and responsibilities of production team members during setup, production, and strike.
- 9) Collaborate effectively with designers, technical directors, and stage/production managers to support lighting execution.
- 10) Evaluate personal adherence to safety and crew expectations and adjust practices to meet professional standards.

3. Lighting Design Foundations and Theory

Objective: Students will analyze and apply foundational lighting design principles by using color, intensity, direction, and quality of light to support mood, storytelling, continuity, and audience perception while interpreting scripts, storyboards, and shot lists to develop lighting concepts in digitally based production environments.

- 11) Explain fundamental principles of lighting design for film, video, and staged productions.
- 12) Apply color theory, intensity, direction, and quality of light to support mood, storytelling, and continuity.
- 13) Analyze how lighting choices influence audience perception, emotion, and narrative clarity.
- 14) Interpret scripts, storyboards, and shot lists to develop lighting concepts using digital planning and visualization tools.

4. Electrical Knowledge and Technical Systems

Objective: Students will apply foundational electrical and technical knowledge for digitally controlled lighting systems by understanding power distribution, load calculations, console and network control systems, lighting instruments, rigging hardware, and data cabling while maintaining safe electrical practices in production environments.

- 15) Explain basic electrical theory, power distribution, and load considerations specific to lighting systems.
- 16) Apply safe electrical practices when working with power, dimmers, and control systems.
- 17) Differentiate lighting instruments, digital control accessories, and rigging hardware by function and application.
- 18) Identify appropriate power and data cabling, including DMX, for production needs.

5. Lighting Documentation and Design Development

Objective: Students will create and interpret professional digital lighting documentation by producing lighting plots, schedules, hook-ups, cue sheets, and visualizations using industry-standard software, conventions, and tools to clearly communicate design intent and meet production requirements.

- 19) Create scaled digital lighting designs using industry-standard drawing conventions and software tools.
- 20) Construct lighting plots, electrical schedules, hook-up charts, and cue documentation using CAD and other digital design software.
- 21) Interpret and revise lighting paperwork to meet production requirements.
- 22) Produce digital lighting visualizations that communicate design intent effectively.

6. Installation, Focus, Programming and Operation

Objective: Students will install, program, and operate lighting systems by safely hanging, focusing, coloring, patching, digitally programming, and troubleshooting lighting equipment, collaborating during live or recorded productions, and adjusting cues in response to creative feedback and production constraints.

- 23) Install, hang, focus, color, and patch lighting equipment according to design plans and safety standards.
- 24) Program a digital lighting console to create cues, looks, and transitions appropriate to the production.
- 25) Participate collaboratively in live or recorded lighting setups based on a specific script or production brief.
- 26) Adjust digitally programmed lighting cues in response to director feedback and production constraints.

7. Sound Integration Awareness (Supporting Strand)

Objective: Students will analyze how lighting and sound systems interact by interpreting basic sound plots, supporting audio setup and patching, and evaluating how synchronized lighting and sound enhance storytelling, pacing, and overall production quality.

- 27) Interpret basic sound plots to understand integration between lighting and sound systems.
- 28) Assist in identifying and patching microphones, speakers, monitors, and intercom systems.
- 29) Analyze how lighting and sound work together to support storytelling and pacing.

8. Post-Production, Strike and Asset Management

Objective: Students will demonstrate responsible post-production and digital asset management practices by safely striking and storing equipment, organizing digital files and lighting documentation, evaluating lighting system condition, reporting maintenance needs, and applying environmentally sustainable practices to production materials and resources.

- 30) Demonstrate proper procedures for striking, storing, securing, and digitally cataloging lighting and production equipment.
- 31) Evaluate equipment condition and report maintenance or repair needs.
- 32) Apply sustainable practices when disposing of or repurposing set and production materials.

9. Portfolio Development and Presentation

Objective: Students will develop and present a professional digital lighting design portfolio by curating completed lighting projects, documenting design processes, reflecting on creative and technical growth, and organizing digital artifacts that demonstrate readiness for postsecondary education or careers in production.

- 33) Curate digital portfolio artifacts that demonstrate lighting design knowledge, technical skill, and creative growth.
- 34) Organize portfolio materials including digital lighting plots, cue sheets, documentation, renderings, and reflections.
- 35) Present and explain portfolio selections using appropriate lighting design vocabulary and professional communication.

10. Leadership

Objective: *Students will demonstrate leadership in production environments by applying communication, collaboration, initiative, responsibility, and ethical decision-making skills to support team effectiveness and successful lighting execution.*

- 36) Demonstrate leadership skills through communication, initiative, accountability, and professional behavior.
- 37) Collaborate effectively by contributing to production goals, resolving challenges, and supporting team success.
- 38) Participate in leadership experiences such as CTSO involvement, crew leadership roles, or peer mentoring.

11. Work-Based Learning

Objective: *Students will connect classroom learning to industry practice by participating in work-based learning experiences, applying technical and employability skills, and reflecting on professional expectations within lighting and production careers.*

- 39) Participate in career-connected experiences such as job shadows, client-based projects, mentorships, or internships.
- 40) Demonstrate employability skills including punctuality, communication, adaptability, and professionalism.
- 41) Reflect on work-based learning experiences to evaluate skill development, career interests, and future pathways.

12. Final Assessment Project

Objective: *Students will complete a final lighting design project that demonstrates mastery of lighting theory, technical execution, safety practices, and creative problem-solving through planning, implementation, and evaluation of a production-ready lighting design.*

- 42) Plan and produce a digitally based lighting design project that includes concept development, documentation, programming, and execution.
- 43) Present the completed project with supporting materials such as lighting plots, cue sheets, or design rationale.
- 44) Evaluate project outcomes using feedback, self-assessment, and established criteria.

13. Career and Technical Student Organizations

Objective: *Using the CTSO Resource Document, chapter activities will provide some of the best opportunities CTSO members will have to learn by doing. A successful program*

of work creates a positive learning atmosphere in the classroom. CTSO members learn how to accept responsibility, work as a team, manage a budget, and handle success and failure. Per the CTE Admin Handbook, CTSOs are embedded into curriculum.

Professional Development

Prepare each member for entry into the workforce and provide a foundation for success in a career. Becoming a professional does not stop with acquiring a skill, but involves an increased awareness of the meaning of good citizenship and the importance of labor and management in the world of work.

Community Service

Promote and improve goodwill and understanding among all segments of the community through services donated by CTSO chapters, and to instill in its members a lifetime commitment to community service.

Business and Industry Connections

Increase awareness of quality job practices and attitudes, and increase the opportunities for employer engagement and eventual employment.

Financial Leadership

Plan and participate in activities to allow all members to carry out the chapter's projects. Educate members on their own personal finance for current and future success.

Public Relations

Make the general public aware of the good work that students in career and technical education are doing to better themselves and their community, state, nation, and world.

Social Activities

To increase cooperation in the school and community through activities that allow CTSO members to get to know each other in something other than a business or classroom setting.

Academic Standards Alignment

Colorado CTE courses are required to integrate academic and essential skills into course content. The following academic standards have been identified as aligned to this course and should be integrated throughout instruction.

[CO CTE Academic Standards Resources](#) (Rubrics, integration strategies, etc)
[CDE Colorado Academic Standards Online](#) (Online standards lookup tool)

Note: Mathematics and Science standards will be added in the future. Visit the [Colorado Academic Standards](#) page for the most current version.

Reading, Writing and Communicating Crosswalk

Course: Lighting Design

Colorado Academic Standards – Reading, Writing and Communicating

Standard	Prepared Graduate Competency	Description	Course Evidence / Alignment
Standard 1: Oral Expression and Listening	Prepared Graduate 1 – Collaboration	Collaborate effectively as group members or leaders who listen actively and respectfully; pose thoughtful questions, acknowledge the ideas of others; and contribute ideas to further the group's attainment of an objective.	Students collaborate with directors, designers, and production teams, follow verbal cues during rehearsals and performances, and contribute ideas to develop advanced lighting designs.
Standard 1: Oral Expression and Listening	Prepared Graduate 2 – Oral Presentations	Deliver effective oral presentations for varied audiences and varied purposes.	Students present lighting design concepts, cue structures, plots, and design rationales for theatrical and media productions.
Standard 2: Reading for All Purposes	Prepared Graduate 4 – Informational Texts	Read a wide range of informational texts to build knowledge and to better understand the human experience.	Students read and apply informational texts including scripts, lighting plots, cue sheets,

			equipment manuals, safety documentation, and production schedules.
Standard 2: Reading for All Purposes	Prepared Graduate 5 – Language in Context	Understand how language functions in different contexts, command a variety of word-learning strategies to assist comprehension, and make effective choices for meaning or style when writing and speaking.	Students use precise lighting design and technical theatre vocabulary and adapt language for design meetings, technical documentation, and performance communication.
Standard 3: Writing and Composition	Prepared Graduate 7 – Informational Writing	Craft informational/explanatory texts using techniques specific to the genre.	Students write lighting design statements, cue lists, production notes, reflections, and documentation explaining advanced lighting decisions and techniques.
Standard 3: Writing and Composition	Prepared Graduate 9 – Writing Process	Demonstrate mastery of their own writing process with clear, coherent, and error-free polished products.	Students revise written documentation and refine lighting plans and cue sheets to produce clear, accurate, and production-ready materials.
Standard 4: Research Inquiry and Design	Prepared Graduate 10 – Research and Ethics	Gather information from a variety of sources; analyze and evaluate its quality and relevance.	Students research lighting styles, technologies, historical contexts, and production needs; evaluate sources.

Free Resource Links

1. Career Exploration and Postsecondary Opportunities

- My Next Move (lighting design careers, job duties, education pathways)
<https://www.mynextmove.org/>
- CareerOneStop – Lighting Technicians (career pathways, certifications, training options)
<https://www.careeronestop.org/>
- USITT (United States Institute for Theatre Technology) (lighting design careers, professional organizations, industry standards)
<https://www.usitt.org/>
- ETCP (Entertainment Technician Certification Program) (professional certifications, lighting industry credentials)
<https://etcp.usaentertainmenttechnicians.org/>

2. Safety, Professional Practice and Crew Responsibilities

- USITT Safety Resources (lighting safety standards, PPE, best practices)
<https://www.usitt.org/safety>
- OSHA – Entertainment Industry Safety (electrical safety, workplace hazards)
<https://www.osha.gov/entertainment>
- Stage Directions – Theatre Safety (crew responsibilities, professional conduct)
<https://www.stage-directions.com/>
- Theatre Safety Blog (lighting shop safety, backstage procedures)
<https://theatersafetyblog.com/>

3. Lighting Design Foundations and Theory

- Stage Lighting Basics (lighting principles, color theory, direction and intensity)
<https://www.stagelightingbasics.com/>
- National Theatre Learning – Lighting Design (lighting theory, storytelling support)
<https://www.nationaltheatre.org.uk/learn>
- Drama Notebook – Lighting Design (foundational lighting concepts, mood and meaning)
<https://www.dramanotebook.com/>
- BBC Bitesize – Lighting Design (design principles, visual storytelling)
<https://www.bbc.co.uk/bitesize>

4. Electrical Knowledge and Technical Systems

- ETC Education Resources (lighting systems, consoles, electrical fundamentals)
<https://www.etcconnect.com/Education/>
- Stage Lighting Basics – Electricity (power distribution, dimmers, load calculations)
<https://www.stagelightingbasics.com/>
- USITT Technical Resources (lighting instruments, rigging, control systems)
<https://www.usitt.org/>

- Breakthrough Lighting Tutorials (DMX, control systems, electrical safety)
<https://www.learnstagelighting.com/>

5. Lighting Documentation and Design Development

- Learn Stage Lighting – Paperwork (lighting plots, hookups, schedules)
<https://www.learnstagelighting.com/>
- USITT Design Documentation Resources (lighting plots, professional conventions)
<https://www.usitt.org/>
- Drama Notebook – Lighting Paperwork (plots, cue sheets, schedules)
<https://www.dramanotebook.com/>
- Stagecraft Fundamentals (drafting conventions, lighting documentation basics)
<https://www.stagecraftfundamentals.com/>

6. Installation, Focus, Programming and Operation

- ETC Video Library (hanging, focusing, programming lighting consoles)
<https://www.etcconnect.com/Videos/>
- Learn Stage Lighting – Programming (console operation, cue building)
<https://www.learnstagelighting.com/>
- Stage Lighting Basics – Focus and Hang (installation and focus techniques)
<https://www.stagelightingbasics.com/>
- USITT Production Resources (collaborative lighting execution)
<https://www.usitt.org/>

7. Sound Integration Awareness (Supporting Strand)

- USITT Sound and Lighting Integration (collaboration across design departments)
<https://www.usitt.org/>
- Stage Directions – Design Collaboration (lighting and sound coordination)
<https://www.stage-directions.com/>
- TheatreArtLife – Cross-Department Design (lighting, sound, and scenic interaction)
<https://www.theatreartlife.com/>
- National Theatre Learning – Production Teams (integrated design processes)
<https://www.nationaltheatre.org.uk/learn>

8. Post-Production, Strike and Asset Management

- USITT Strike and Load-Out Guidelines (proper strike procedures, equipment storage)
<https://www.usitt.org/>
- Theatre Green Book (sustainable lighting and production practices)
<https://theatregreenbook.com/>
- Stage Directions – Theatre Operations (equipment maintenance, asset management)
<https://www.stage-directions.com/>

- Drama Notebook – Theatre Management (inventory, postproduction organization)
<https://www.dramanotebook.com/>

9. Portfolio Development and Presentation

- Adobe Portfolio (professional portfolios, showcasing lighting design work)
<https://portfolio.adobe.com/>
- USITT Portfolio Resources (lighting design portfolios, documentation standards)
<https://www.usitt.org/>
- Frame.io Blog – Showreels (video portfolio presentation, feedback, revisions)
<https://blog.frame.io/>
- Canva Presentation Templates (portfolio presentation, visual organization)
<https://www.canva.com/presentations/templates/>

10. Leadership

- MindTools – Leadership Skills (communication, teamwork, decision-making)
https://www.mindtools.com/pages/main/newMN_LDR.htm
- SkillsYouNeed – Leadership (collaboration, conflict resolution, professionalism)
<https://www.skillsyouneed.com/lead/>
- TED Talks – Leadership (leadership perspectives, communication skills)
<https://www.ted.com/topics/leadership>
- National Society of Leadership and Success (leadership development, goal setting)
<https://www.nsls.org/>

11. Work-Based Learning

- CareerOneStop – Work-Based Learning (internships, apprenticeships, career exploration)
<https://www.careeronestop.org/ExploreCareers/learn/work-based-learning.aspx>
- ACTE Work-Based Learning Resources (career readiness, employability skills)
<https://www.acteonline.org/professional-development/work-based-learning/>
- ETCP (Entertainment Technician Certification Program) (lighting careers, industry credentials)
<https://etcp.usaentertainmenttechnicians.org/>

12. Final Assessment Project

- PBS LearningMedia – Media Production Projects (project ideas, assessment, rubrics)
<https://www.pbslearningmedia.org/>
- ETC Video Library (lighting execution, programming, production workflows)
<https://www.etcconnect.com/Videos/>
- National Theatre Learning (lighting projects, production case studies)
<https://www.nationaltheatre.org.uk/learn>
- Rubistar (project rubrics, assessment tools)
<https://www.rcampus.com/rubistar/>



Technology Student Association – National Competitive Events

System Control Technology

Objective: *Students will design, construct, program, troubleshoot, document, and demonstrate a working control-system solution that responds to a TSA-provided problem.*

- Interpret the TSA-provided control-system problem and identify the required functions, constraints, and performance goals.
- Design a system that uses inputs, outputs, circuits, sensors, lights, motors, controls, feedback, or programmable components.
- Create a program or control sequence that allows the system to operate as intended.
- Construct and test the system using approved materials, tools, electronics, and safety procedures.
- Troubleshoot electrical, programming, sensor, lighting, wiring, or reliability issues to improve system performance.
- Maintain an inventor's log documenting design decisions, testing, revisions, and final system operation.
- Demonstrate the completed system and explain how the design meets the problem criteria during judge evaluation.

Resources

- Technology Student Association – System Control Technology competition guidelines
<https://tsaweb.org/competitions-programs/tsa/themes-problems>
- Arduino Education – Electronics and control systems
<https://www.arduino.cc/education>
- Tinkercad Circuits – Circuit simulation and prototyping
<https://www.tinkercad.com/circuits>
- Adafruit Learning System – LEDs, sensors, and microcontrollers
<https://learn.adafruit.com/>



Technology Student Association – National Competitive Events

Animatronics

Objective: Students will design, construct, control, document, and present an animatronic device that meets TSA requirements for movement, control technology, lights, sound, sensors, and mechanical systems.

- Research the annual TSA Animatronics theme and develop an original animatronic concept.
- Design an animatronic device that integrates structure, movement, lighting, sound, control, and presentation elements.
- Construct an exterior shell, scenic surface, or display element that can be removed to show internal components to judges.
- Incorporate multiple movements using mechanisms such as linkages, gearing, cabling, fluid power, or related systems.
- Integrate control technology, sensors, lights, sound, motors, or electronic components into the animatronic model.
- Test and troubleshoot the device for reliable operation, safe power use, effective lighting, appropriate movement, and presentation readiness.
- Present the animatronic device and explain the design process, internal components, control system, lighting choices, and final performance.

Resources

- Technology Student Association – Animatronics competition guidelines
<https://tsaweb.org/competitions-programs/tsa/themes-problems>
- Arduino Education – Sensors, lights, and control systems
<https://www.arduino.cc/education>
- Adafruit Learning System – Electronics, LEDs, sensors, and microcontrollers
<https://learn.adafruit.com/>
- Instructables Circuits – Electronics and animatronics project examples
<https://www.instructables.com/circuits/>



Technology Student Association – National Competitive Events

Digital Video Production

Objective: *Students will plan, produce, document, and present an original digital video that meets TSA Digital Video Production requirements for storytelling, technical production, copyright compliance, and interview presentation.*

- Research the annual TSA Digital Video Production theme and develop an original video concept.
- Analyze the story, audience, purpose, visual style, lighting needs, and production requirements before filming.
- Create a storyboard, script, shot list, lighting plan, or production schedule that guides the production process.
- Capture original video using intentional lighting design, exposure, color, composition, camera work, and sound techniques.
- Edit the production using pacing, transitions, sound, titles, graphics, color correction, and visual storytelling techniques.
- Document the production through a portfolio that includes purpose, storyboard, script, hardware/software list, references, permissions, consent forms, and work log.
- Participate in an interview explaining the video concept, lighting decisions, production process, technical choices, and theme connection.

Resources

- Technology Student Association – Digital Video Production competition guidelines
<https://tsaweb.org/competitions-programs/tsa/themes-problems>
- Adobe Premiere Pro – Video editing and production tools
<https://www.adobe.com/products/premiere.html>
- DaVinci Resolve – Video editing, color, audio, and post-production tools
<https://www.blackmagicdesign.com/products/davinciresolve>
- Canva – Storyboarding, planning, and production graphics
<https://www.canva.com/>