



Bristol Public Schools
Office of Teaching & Learning

Department	Career and Technical Education (CTE)
Department Philosophy	Bristol schools believe in providing students with rich opportunities to ensure career and college readiness. These opportunities include development of skills, practices, and exploration within several career clusters and pathways. Each CTE curriculum enables students to acquire and strengthen leadership, literacy, numeracy, decision-making, computer skills, and technology skills through 11 career clusters and pathways: (1) architecture and construction, (2) business management, (3) education and training, (4) finance, (5) health science, (6) hospitality and tourism, (7) information technology, (8) manufacturing, (9) marketing, (10) transportation, distribution and logistics, and (11) STEM. Each career cluster provides students with access to hand-on experiences that will allow for students development of skills that will support successful transition to their post secondary experiences.
Course	Scenic Design & Construction II
Course Description for Program of Studies	This course offers students a more advanced access to design principles and construction application of the sets for theatrical productions. Students in Scenic Design and Construction II are leaders in the course.
Grade Level	9 - 12
Pre-requisites	Scenic Design & Construction I
Credit (if applicable)	(0.5 credit)
Pacing	45 Class Meetings per semester; Lessons and project pacing will be driven by the performance schedule. Collaboration with the Theater Director is required each semester to develop pacing for the course.

Course Equipment, Supplies, and Resources	
Required Equipment	<p><u>Stationary Power Equipment:</u> Scroll saw, band saw, table saw, miter saw, drill press, jointer, planar</p> <p><u>Portable Power Tools:</u> Dremel, belt sander, palm sander, circular saw, miter saw, coping saw, backsaw, jigsaw, reciprocating saw, cordless screwdriver, cordless drill, corded drill, impact drill, hammer-drill, angle grinder, bench grinder, router (and table), nail gun, air compressor, shop vac, battery chargers</p> <p><u>Hand Tools:</u> hammers, wrenches, screwdrivers, pliers, saws, levels, measuring squares, crow bar, nail pullers, planars, chisel, utility knife, caulk gun, files, wire brushes</p> <p><u>Analog Measurement Tools:</u> ruler, tape measure, protractor, caliper, measuring wheels, bubble inclinometer, level, micrometer, angle locator, laser distance measuring tool, compass, pressure gauge, square</p> <p><u>Digital Measurement Tools:</u> laser distance measuring tool, laser level, micrometer, thermometer, angle gauge, voltage checker, multimeter</p> <p><u>Storage:</u> toolboxes, tool belts, rolling carts, shelving, locks, flammables cabinet, storage bins</p> <p><u>Cleaning Supplies:</u> push brooms, pick-up brooms, dust pans, paper towels, sponges, dish soap,</p> <p><u>Miscellaneous:</u> construction pencils, extension cords, sawhorses, ladders, stools, portable lighting, buckets, utility vises, C clamps, easy clamps, digital camera,</p>
Consumables Lists	<p><u>Building Materials:</u> Wood, Acrylic, Fasteners (wood screws, self-tapping screws, nails, nuts, bolts, washers, anchors ,rivets)</p> <p><u>Paints, Adhesives, and Removers:</u> paint and stain (water based where possible; oil if necessary), traditional solvent-based, water-based latex, and polyurethane adhesives (Gorilla Heavy Duty Construction Adhesive,Liquid Nails Extreme Heavy Duty Construction Adhesive) Goof-Off Heavy Duty Adhesive Remover, acetone (remover for oil-base)</p> <p><u>Safety Equipment:</u> first aid kits, alcohol wipes, construction gloves, disposable gloves, safety glasses, safety goggles, safety goggle cabinet, dust masks, hardhats, hearing protection, aprons, dish wash bins, Dawn dish detergent, hand soap, Goo-Gone Hand Cleaner, paper towels</p> <p>Miscellaneous: sand paper</p>
Digital Resources	<p>A-Level Drama and Theater: Understanding and Designing Theater Sets Teacher Guide</p> <p>Production Skills: Set Design Guide</p> <p>OSHA Hand and Power Tool Safety</p> <p>The Power Tool Institute</p> <p>Power Tool Institute Tool Safety Videos</p> <p>Resources for Design Work: vendors, web sites, catalogs, trade magazines and training</p>

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UNIT 1: Introduction to Set Design II

Set Design and Construction II

Essential Questions

- How do we exhibit professionalism in the construction trades?
- What safety considerations are needed in the workshop?
- How do we know how to build a project?
- How do project designers communicate their ideas?
- How do builders interpret project designs?
- How do we understand the context and settings for a drama, music, or theater production?
- How does collaboration support set design?

Advance CTE Standard	Performance Elements & Learning Targets	Key Concepts/Big Ideas	Academic Vocabulary
ACC09.02 Recognize the responsibilities and personal characteristics to develop individual goals for professionalism.	<ul style="list-style-type: none"> ● Identify responsibilities and personal characteristics used in the workplace. ● Present a professional image in the workplace. <ul style="list-style-type: none"> ○ I can consistently demonstrate the responsibilities and characteristics of a professional craftsman. ○ I can document customer satisfaction. ○ I can summarize appropriate professional memberships and certifications to support my design work. ○ I can identify and follow rules, regulations, and guidelines. 	<ul style="list-style-type: none"> ● Work Habits ● Habits of Mind ● Design Process 	Persistence, impulsivity, listening with empathy, flexibility, metacognition, accuracy, questioning, clarity, precision, imagining, innovating, responsible risks, interdependent
ACC10.01 Read, interpret, and use technical drawings, documents, and specifications to plan a project.	<ul style="list-style-type: none"> ● Describe written standards and specifications that apply to the project. ● Recognize how specifications and standards are arranged for proper access. <ul style="list-style-type: none"> ○ I can interpret and explain standards and specifications. ○ I can use specifications and standards in my designs. ○ I can apply specifications and standards appropriately. 	<ul style="list-style-type: none"> ● General Scene Shop Safety Rules ● Shop Work Areas (table, sawhorses, stools, tool crib, safety gear & equipment, PPE, cleaning) ● Workflow and Layout to Stage ● Project Blueprints ● Applicable Safety Standards and Codes 	Standards, specifications, codes, OSHA, NFPA, ANSI, DOT, workflow, layout, PPE
National Core Arts Standards - Theater Anchor Standard 1: Generate and conceptualize artistic ideas and work.	<ul style="list-style-type: none"> ● Explore the impact of technology on design choices in a drama/theater work. ● Understand and apply technology to design solutions for drama/theater work. ● Create a complete design for a drama/theater work that incorporates all elements of technology. <ul style="list-style-type: none"> ○ I can utilize 3D technology to create set design mock-ups. ○ I can consider how to incorporate 3D design -printing, laser cutting - into full-scale set design. ○ I can collaborate with computer design (visual and music technologies) to optimize set design plans. 	<ul style="list-style-type: none"> ● Role of Set Designer and Crew ● Production Roles: Director, Costume Designer, Actors, Prop Master, Lighting Technician ● Stage Terms and Description ● Types of Stages/Staging & Audience Location ● Set Design Symbols, Vocabulary, and Ground Plans ● White Card Models and Model Boxes ● Read and Analyze the Script 	3D technology, additive and subtractive manufacturing, 3D printer, laser cutting, stock materials, mock-up, props, visual technology, music technology, optimization

Pacing and Implementation

45 Class Meetings per semester; Lessons and project pacing will be driven by the performance schedule. Collaboration with the Theater Director is required each semester to develop pacing for the course.

Anticipate **7 - 10 class meetings** for this unit.

Math and ELA Standards Connections

CCSS.ELA-LITERACY.RST.9-10.4

Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.

CCSS.ELA-LITERACY.RST.9-10.7

Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

UNIT 2: Project Planning II

Set Design and Construction II

Essential Questions

- How is math and measurement used in designing and constructing projects?
- How do precision and accuracy in measurement support project designers and builders?
- How do project designers and builders communicate with each other to convey their ideas?
- What can we do to clarify information for designing or building a project?
- What organizations govern safety in construction?
- How do we obtain safety regulations we need to observe in the workshop?
- How do we determine the PPE needed while working on a project?
- How does collaboration support project design and construction?
- How can we ensure a project is completed on time?

Advance CTE Standard	Performance Elements & Learning Targets	Key Concepts/Big Ideas	Academic Vocabulary
ACC01.01 Perform math operations such as estimating and distributing materials and supplies to complete jobsite/workplace tasks.	<ul style="list-style-type: none"> ● Use appropriate formulas to determine percentages and decimals. ● Use appropriate formulas to determine ratios, fractions, and proportion measures. ● Conceptualize a three-dimensional form from a two-dimensional drawing to visualize proposed work. <ul style="list-style-type: none"> ○ I can calculate percentages and decimals. ○ I can use percentages/decimals to perform measurement tasks. ○ I can calculate ratios, fractions and proportion measures. ○ I can use ratios, fractions and proportion measures to perform measurement tasks. ○ I can measure dimensions, spaces and structures using U.S. Standard units. ○ I can measure dimensions, spaces and structures using Metric units. ○ I can conceptualize a three-dimensional form from a two-dimensional drawing to visualize proposed work. ○ I can build three-dimensional form models. 	<ul style="list-style-type: none"> ● Budgeting ● Design Calculations (volume, area, perimeter, width, depth, height) ● Draw and Render ● Material Selection ● Set Storage and Travel Pathways 	Calculation, English units, metric units, precision, accuracy, volume, area, perimeter, width, depth, height, whole numbers, decimals, fractions, complex numbers, and polynomials, estimate, render
ACC05.01 Comply with regulations and applicable codes to establish a legal and safe workplace/jobsite.	<ul style="list-style-type: none"> ● Identify governmental regulations and national, state and/or local building codes that apply to a given workplace/jobsite. ● Evaluate workplace/jobsite activities for compliance with governmental and other applicable safety regulations such as EPA and OSHA. ● Identify workplace/jobsite environmental hazards of a given situation. <ul style="list-style-type: none"> ○ I can follow government and industry regulations and building codes for construction. ○ I can use information given in regulations and codes correctly. ○ I can pass job inspections and comply with regulations at all times. ○ I can read and discuss information on OSHA, EPA and other safety regulations. 	<ul style="list-style-type: none"> ● Governmental Safety Regulatory Agencies ● Read, Analyze, Interpret Safety Standards and Codes ● Locate Safety Standards ● Jobsite Analysis and Inspections 	Regulations, regulatory, code, PPE, SDS, EPA, OSHA, NFPA, EPA, DOT, jobsite analysis, inspection

<p>ACC05.03 Examine all factors affecting the project and the planning process.</p>	<ul style="list-style-type: none"> ● Understand social, environmental and political factors that affect the project. <ul style="list-style-type: none"> ○ I can understand and describe the project context. ○ I can use the concept of "Critical Path Method (CPM)" and/or similar sequential methods so that work progresses efficiently. 	<ul style="list-style-type: none"> ● Interdepartment Collaboration ● Planning for Efficiency ● Project Overview and Revisions to Process/Procedures 	<p>Flowchart, collaborators, workflow, outcome, goals, factors, context, CPM, efficiency, revision</p>
<p>ACC07.01 Establish specific goals to manage project assignments in a timely manner.</p>	<ul style="list-style-type: none"> ● Organize work teams that effectively manage assignments. <ul style="list-style-type: none"> ○ I can assign and list assignments by activity and personnel. ○ I can monitor and write a report on progress of the project. ○ I can evaluate completed projects according to customer requirements/project criteria. 	<ul style="list-style-type: none"> ● Technical Rehearsals and Revisions ● Opening Night and Performances 	<p>Technical rehearsal, specification, deadline, project criteria, report</p>
<p>Pacing and Implementation <i>45 Class Meetings per semester; Lessons and project pacing will be driven by the performance schedule. Collaboration with the Theater Director is required each semester to develop pacing for the course.</i></p> <p>Anticipate 7 - 10 class meetings for this unit.</p>		<p>Math and ELA Standards <u>CCSS.ELA-LITERACY.RST.11-12.9</u> Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. <u>CCSS.ELA-LITERACY.WHST.9-10.2.E</u> Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. <u>Math Practices:</u></p> <ol style="list-style-type: none"> 1. Model with mathematics. 2. Attend to precision. 	

UNIT 3: Project Construction II

Set Design and Construction II

Essential Questions

- How do we plan, organize, and manage a project?
- How can we optimize workflow?
- How can we minimize workplace hazards?
- How do we learn to correctly and safely use specific tools and equipment?
- How do we determine which tools and equipment are required to construct a project?
- How do we manage unexpected events and conditions into our project plan?

Advance CTE Standard	Performance Elements & Learning Targets	Key Concepts/Big Ideas	Academic Vocabulary
ACC03.02 Evaluate and adjust design and construction project plans and schedules to respond to unexpected events and conditions.	<ul style="list-style-type: none"> ● Incorporate potential job disruptions into planning timelines. ● Adjust project plans and schedules when presented with unexpected information. ● Identify and assess critical situations as they arise to resolve issues. ● Generate a project update that tracks changes necessitated by unexpected events and conditions. <ul style="list-style-type: none"> ○ I can identify potential events and conditions that disrupt the completion of a job. ○ I can solve situational problems involved with unexpected events and conditions. ○ I can modify existing plans to reflect an unexpected change. ○ I can modify existing schedules to reflect an unexpected change. ○ I can modify the existing budget to reflect unexpected changes. ○ I can evaluate potential solutions and determine the best solution. ○ I can appraise critical situations and implement appropriate responses. ○ I can present an oral and/or written status report on the project. 	<ul style="list-style-type: none"> ● Budgeting ● Construction Calculations ● Interdepartment Collaboration ● Set Construction ● Set Storage and Travel Pathways ● Technical Rehearsals and Revisions ● Opening Night and Performances 	Workflow, disruptions, timelines, project plans, assess, critical situation, estimates, project report, project update, situational, status report, efficiency, evaluation, resources, budget, collaboration, technical rehearsals, project revisions
ACC06.01 Assess and control the types and sources of workplace hazards to ensure a safe workplace and jobsite.	<ul style="list-style-type: none"> ● Demonstrate methods to correct common design and construction hazards. ● Identify types and sources of workplace hazards common to design and construction situations. ● Demonstrate personal and group health and safety practices. <ul style="list-style-type: none"> ○ I can identify and describe common hazards in the workplace. ○ I can identify and describe major sources of information about hazards in the workplace (e.g. Safety Data Sheets (SDS), work procedures, exposure control plans, training materials, labels, and signage). ○ I can identify sources of combustible/flammable materials, fire and emergencies to establish a fire safe environment. ○ I can interpret safety signs and symbols. 	<ul style="list-style-type: none"> ● Set Construction ● Set Storage and Travel Pathways ● Recognize Mechanical and Electrical Hazards ● Chemical Hazard Identification ● PPE Inspection, Maintenance, and Replacement ● Technical Rehearsals and Revisions ● Opening Night and Performances 	Mechanical, physical, electrical, and chemical hazards; health and safety practices, Safety Data Sheets (SDS), exposure controls, personal protective equipment (PPE), combustible, flammable, safety signs, safety symbols, slips, trips, spill prevention, inspection, maintenance

	<ul style="list-style-type: none"> ○ I can identify methods for disposing of hazardous materials. ○ I can demonstrate principles of safe physical movement to avoid slips, trips, and spills. ○ I can inspect and use personal protective equipment (PPE). 		
ACC10.02 Use and maintain appropriate tools, machinery, equipment, and resources to accomplish project goals.	<ul style="list-style-type: none"> ● Identify sources of information concerning state-of-the-art tools, equipment, materials, technologies and methodologies. ● Demonstrate use of tools, machinery, equipment and other resources commonly used in design and construction. <ul style="list-style-type: none"> ○ I can operate tools, machinery and equipment in a safe manner. ○ I can properly maintain and care for tools, machines and equipment. ○ I can safely use tools, machines, and equipment productively and efficiently in alignment with industry standards. ○ I can research current periodicals, industry publications and manufacturer's catalogs for best practices in design and construction. 	<ul style="list-style-type: none"> ● Budgeting ● Set Construction ● Tool Maintenance ● Current Trends ● Best Practices in Construction ● Emerging Construction Technology 	Tools, machinery, equipment, maintenance, inspection, efficiency, industry standards, construction technology
<p>Pacing and Implementation <i>45 Class Meetings per semester; Lessons and project pacing will be driven by the performance schedule. Collaboration with the Theater Director is required each semester to develop pacing for the course.</i></p> <p>Anticipate 15 - 20 class meetings for this unit.</p>		<p>Math and ELA Standards CSS.ELA-LITERACY.RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. CCSS.ELA-LITERACY.WHST.9-10.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically. Math Practices: 1. Make sense of problems and persevere in solving them.</p>	

UNIT 4: Project Deconstruction & Career Development I & II

Set Design and Construction I & II

Essential Questions:

- How do we reflect upon prior experiences to revise and optimize our work?
- How can we minimize project costs?
- What impact does material reclamation have on our space and future work?
- What traits and characteristics are desirable for employment in the construction field?
- How can we improve our teamwork skills?
- What are your personal and professional ethics?
- How does licensure, certifications and credentialing support employability?

Advance CTE Standard	Performance Elements & Learning Targets	Key Concepts/Big Ideas	Academic Vocabulary
ACC03.01 Create and implement project plans considering available resources and requirements of a project/problem to accomplish realistic planning in design and construction situations.	<ul style="list-style-type: none"> ● Use available resources/materials effectively while completing a project or resolving a problem with a project plan. ● Determine alternative solutions for a specific project/problem. <ul style="list-style-type: none"> ○ I can evaluate waste of resources/materials. ○ I can evaluate the necessity for additional resources/materials. ○ I can evaluate the feasibility of alternative suggestions. ○ I can implement appropriate alternatives. ○ I can suggest improvements to project design and construction that will minimize waste and project cost. 	<ul style="list-style-type: none"> ● Material Reclamation: reuse, recycle, & upcycle ● Project Reflection - Small group & Interdependent Departments ● Revision for Future Projects ● Independent/Small Group Project Proposals 	Resources, resolution, alternative solution, evaluate, implement, project costs
ESS07 Leadership and Teamwork - Advance CTE Essential Knowledge and Skills (ESS) for Architecture and Construction	<ul style="list-style-type: none"> ● Employ leadership skills to accomplish organizational goals and objectives. <ul style="list-style-type: none"> ○ I exhibit traits such as empowerment, risk, communication, focusing on results, decision-making, problem solution, and investment in individuals when leading a group in solving a problem. ○ I exhibit traits such as compassion, service, listening, coaching, developing others, team development, and understanding and appreciating others when acting as a manager of others in the workplace. ○ I exhibit traits such as enthusiasm, creativity, conviction, mission, courage, concept, focus, and change when interacting with others. ○ I consider issues related to self, team, community, diversity, environment, and global awareness when leading others. ○ I exhibit traits such as innovation, intuition, adaptation, life-long learning and coachability to develop leadership potential over time. ○ I analyze leadership in relation to trust, positive attitude, integrity, and willingness to accept responsibilities in a work 	<ul style="list-style-type: none"> ● Employability Traits ● Leadership Characteristics ● Development of Traits ● Teamwork Skills ● Conflict Management ● Team Performance ● Negotiation Strategies 	empowerment, risk, communication, decision-making, problem solution, investment, compassion, service, listening, coaching, developing others, team development, enthusiasm, creativity, conviction, mission, courage, concept, focus, change, innovation, intuition, adaptation, life-long learning, coachability, integrity, conflict management, adapt, negotiate, reflection, evaluation

	<p>situation.</p> <ul style="list-style-type: none"> ○ Employ teamwork skills to achieve collective goals and use team members' talents effectively. ○ I work with others to achieve objectives in a timely manner. ○ I promote the full involvement and use of team member's individual talents and skills. ○ I employ conflict management skills to facilitate solutions. ○ I develop plans to improve team performance. ○ I demonstrate commitment to and a positive attitude toward team goals. ○ I take responsibility for shared group and individual work tasks. ○ I assist team members in completing work. ○ I adapt effectively to changes in projects and work activities. ○ I negotiate effectively to arrive at decisions. 		
<p>ESS09 Employability and Career Development - Advance CTE Essential Knowledge and Skills (ESS) for Architecture and Construction</p>	<ul style="list-style-type: none"> ● Identify and demonstrate positive work behaviors and personal qualities needed to be employable. <ul style="list-style-type: none"> ○ I demonstrate self-discipline, self-worth, positive attitude, and integrity at work. ○ I demonstrate flexibility and willingness to learn new knowledge and skills. ○ I exhibit commitment to the organization. ○ I apply communication strategies when adapting to a culturally diverse environment. ○ I manage project resources (i.e. budget, supplies, computer, etc). ○ Examine licensing, certification and credentialing requirements at the national, state and local levels to maintain compliance with industry requirements. ○ I examine continuing education requirements related to licensing, certification, and credentialing requirements at the local, state and national levels for chosen occupation. ○ I examine the procedures and paperwork involved in maintaining and updating licensure, certification and credentials for chosen occupation. 	<ul style="list-style-type: none"> ● Positive Work Behaviors ● Personal Qualities ● Personal Ethics ● Business Ethics ● Communication Strategies ● Licensure ● Certification ● Credentials 	<p>self-discipline, self-worth, positive attitude, integrity, flexibility, willingness to learn, commitment, communication skills, adapting, ethics, culturally diverse environment, project resources, licensure, certification, credentials, credentialing,</p>
<p>Pacing and Implementation 45 Class Meetings per semester; Lessons and project pacing will be driven by the performance schedule. Collaboration with the Theater Director is required each semester to develop pacing for the course.</p> <p>Anticipate 7 - 10 class meetings for this unit.</p>		<p>Math and ELA Standards <u>CCSS.ELA-LITERACY.RST.11-12.9</u> Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. <u>CCSS.ELA-LITERACY.WHST.9-10.2.F</u> Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).</p>	

