

CTE FACILITY DESIGN CHECKLIST

Designing Sustainable and Functional Career and Technical Education Spaces

Contact us: Office@rguarchitecture.net | www.rguarchitecture.net

October 2025



Introduction

This checklist, developed by RGU Architecture, guides the design of sustainable and functional Career and Technical Education (CTE) labs. It ensures compliance with educational and environmental standards while fostering student engagement and career readiness. Use this to plan new facilities or renovations, ensuring spaces are future-ready, cost-efficient, and inspiring.

Functional Design Checklist

Ensure CTE labs are practical, adaptable, and aligned with industry needs to prepare students for careers in fields like healthcare, engineering, and manufacturing.

Realistic and Immersive Environments

- ☐ Design spaces mimicking professional workplaces (e.g., welding shops, healthcare simulation rooms).
- ☐ Incorporate industry-grade equipment relevant to CTE programs (e.g., CNC machines, medical-grade monitors).
- ☐ Ensure durable, low-maintenance finishes for high-use areas (e.g., chemical-resistant surfaces in labs).
- ☐ Prioritize safety with clear layouts, proper ventilation, and emergency access points.
- ☐ Flexible and Collaborative Layouts
- ☐ Use open, reconfigurable spaces for lectures, group work, and hands-on projects.
- ☐ Include movable partitions or modular furniture to adapt to program changes.
- ☐ Design centralized “main street” areas to integrate CTE with core subjects (e.g., math, science).
- ☐ Provide breakout zones for interdisciplinary collaboration and team projects.
- ☐ Technology-Ready Infrastructure
- ☐ Install robust electrical systems to support evolving tech (e.g., robotics, VR stations).
- ☐ Ensure high-speed internet and sufficient outlets for device-heavy programs.
- ☐ Integrate Building Information Modeling (BIM) for precise design and future upgrades.
- ☐ Plan for scalable tech integration (e.g., IoT sensors for smart labs).
- ☐ Visibility and Accessibility
- ☐ Use glass walls or transparent elements to showcase CTE activities to students.
- ☐ Position labs centrally within schools to promote career exploration.
- ☐ Ensure ADA compliance with accessible workstations and pathways.
- ☐ Incorporate signage and wayfinding for intuitive navigation.

Sustainable Design Checklist

- ☐ Incorporate eco-friendly practices to reduce costs and environmental impact, aligning with LEED standards and regional and national funding priorities.



Energy Efficiency

- ☐ Install heat recovery systems to capture 80-90% of exhaust energy.
- ☐ Use high-efficiency HVAC and hybrid heat pumps to reduce energy use.
- ☐ Incorporate triple-pane glazing and super-insulated envelopes to minimize heat loss.
- ☐ Add motion-sensor LED lighting and daylight harvesting systems.
- ☐ Sustainable Materials
- ☐ Select low-embodied-carbon materials (e.g., optimized concrete reducing GWP by 32-33%).
- ☐ Use low-VOC paints and finishes for indoor air quality.
- ☐ Source materials with Environmental Product Declarations (EPDs) for transparency.
- ☐ Prioritize regionally sourced materials to reduce transport emissions.
- ☐ Waste Reduction
- ☐ Design with modular components for easy disassembly and reuse.
- ☐ Implement waste separation protocols during construction (target 90% recycling).
- ☐ Plan for operational waste management (e.g., recycling stations in labs).
- ☐ Use digital documentation to minimize paper waste.
- ☐ Certifications and Compliance
- ☐ Comply with local building codes.
- ☐ Align with grant requirements for CTE facilities.
- ☐ Conduct post-occupancy evaluations to verify performance metrics.

Stakeholder Engagement Checklist

Collaborate with educators, industry partners, and communities to ensure designs meet practical and strategic goals.

- ☐ Engage school administrators and CTE instructors early to define program needs.
- ☐ Partner with local industries for real-world input.
- ☐ Involve students in design feedback for user-centered spaces.
- ☐ Align with regional stakeholders for grant/funding support.

Budget and Scalability Checklist

Balance cost efficiency with long-term adaptability to meet growth demands and economic constraints.

- ☐ Use integrated design processes to align budgets early.
- ☐ Prioritize high-ROI features (e.g., energy systems saving 15-20% annually).
- ☐ Design for phased expansions to accommodate future enrollment growth.
- ☐ Leverage regional grants to offset initial costs.

Conclusion

This checklist ensures your CTE lab is sustainable, functional, and ready for the future of education. By prioritizing real-world functionality, eco-friendly design, and stakeholder collaboration, RGU Architecture creates spaces that inspire students and meet industry demands.

Ready to start your project? Contact us at office@rguarchitecture.net or visit www.rguarchitecture.net for a free consultation.