



Career Cluster Institute

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California Career Technical Education Model Curriculum Standards Project

Presented by
Russell Weikle, Education Administrator, CTE
Dr. Patrick Ainsworth, Assistant Superintendent and State
Director, CTE



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CTE Standards Revision

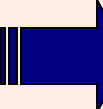
WHY?

- Current CTE Standards adopted in May 2005
- State Education Code requires periodic updates to Standards
- Adoption of the Common Core State Standards
- Update current Pathways



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CTE Standards Revision

- Parallels the national Common CTE Core Standards development
- Addition of Career Ready Practices
- Industry Sector Foundation Standards 
Industry Sector Anchor Standards
- Renaming some pathways, adding some new pathways
- Framework is the next project



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CTE Standards

The CTE standards
are a tool to:

- Foster the Career Readiness of all students.
- Support mastery of essential employability skills and rigorous academic content
- Develop a highly skilled and educated workforce which contributes to economic prosperity
- Support a seamless transition to postsecondary education and/or career entry
- Improve student achievement



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CTE Standards

Common Core Considerations for CTE:

- More than individual presentations, emphasize teams, groups, pairs
- Utilize technology to demonstrate learning/mastery
- Use application, integration, critical thinking, problem solving
- Use research-based approach
- Use similar verbs whenever possible
- Career and postsecondary readiness is the goal for all educators



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CTE Standards

CCSS and CTE Shared Criteria:

- Fewer, clearer, higher
- Research and evidence based
- Reasonable in scope
- Essential, rigorous, clear, specific and coherent
- Aligned with postsecondary and work expectations
- Measurable



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Work Plan

- Industry Sector Review Teams make recommendations for CTE Model Curriculum Foundation and Pathways Standards revisions (completed)
- Process and review recommendations, seek electronic stakeholder comments (completed)
- Design the Model Curriculum Standards Learning Continuum (completed)
- Revise MCS Anchor Standards and Performance Indicators (completed)
- Develop standards language for the Industry Sector Pathways (completed)



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Work Plan (cont'd)

- Identify Common Core State Standards for English language arts and math, science, and social studies standards aligned to Industry Sector Pathways (1st cut completed)
- Process and review completed work, seek electronic & in person public comment
- Submit draft MCS for review and approval to Curriculum Commission
- Submit to State Board of Education for approval
- Update Framework to reflect MCS revisions
- Offer professional development

Structure for Standards Development



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Research

- Bloom's Taxonomy (Revised)
- Rigor and Relevance Framework – Bill Daggett
- Depth of Knowledge - Norman L. Webb (Used by Smarter Balanced)
- Knowledge Dimension - Anderson, Lorin and David Krathwohl
- Combination



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Beyond Knowledge Hierarchy

Knowledge

Create

Reorganize elements
to form a coherent whole

Analyze/Evaluate

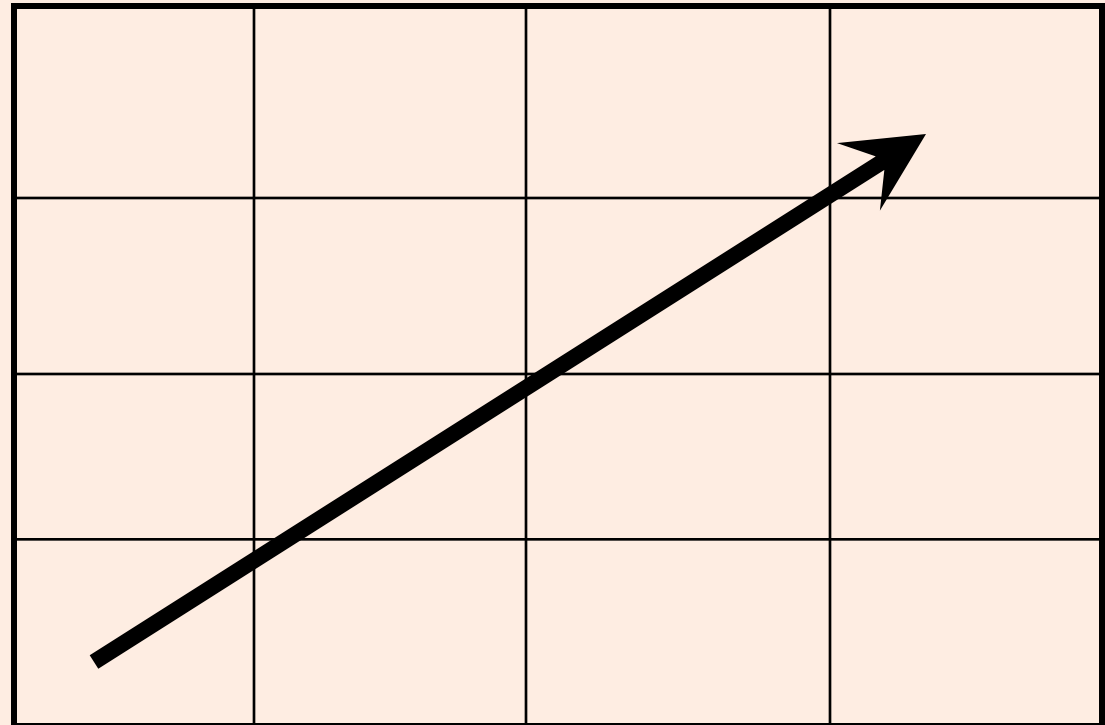
Differentiate, determine
how parts relate, find
coherence

Understand/Apply

Construct meaning
clarify, give examples

Remember

Retrieve knowledge,
recognize, recall, locate



Performance

Build from simple to
complex

Level 1

Apply one-step
process to
solve routine
problems

Level 2

Demonstrate
multiple step
decision-making
to solve routine
problems

Level 3

Construct
solutions to non-
routine problems
using a
sequence of
steps

Level 4

Solve non-
routine real world
complex
problems using
multiple steps
and sources



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Verbs

<i>Remember</i>	<i>Understand/Apply</i>	<i>Analyze/Evaluate</i>	<i>Create</i>
Access	Adhere	Analyze	Advocate
Define	Apply	Assess	Build
Describe	Classify	Comply	Compile
Find	Communicate	Compare	Compose
Identify	Compare	Contrast	Construct
Label	Demonstrate	Deconstruct	Create
List	Develop	Deduce	Design
Locate	Discriminate	Defend	Devise
Match	Employ	Detect	Formulate
Name	Explain	Diagram	Invent
Recall	Implement	Differentiate	Plan
Recite	Infer	Discern	Predict
Recognize	Interpret	Distinguish	Produce
Remember	Maintain	Enhance	Reconstruct
Retrieve	Organize	Evaluate	Reorganize
Select	Participate	Experiment	Synthesize
State	Practice	Explore	
	Promote	Illustrate	
	Summarize	Integrate	
	Transfer	Research	
	Understand	Solve	
	Use	Test	



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CTE Standards

Current Design

- **Industry Sector Foundation Standards**
- **Pathway Standards**



Revised

- **Career Ready Practices**
- **Industry Sector Anchor Standards**
- **Pathway Standards**



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Career Ready Practices

DRAFT examples

- Apply academic knowledge and technical skills to effectively function in work environments
- Model accepted norms of professional and ethical behavior
- ***Manage personal career planning and development***
- Utilize technology to enhance productivity
- Utilize critical thinking and decision making skills to solve non-routine complex work place problems using multiple steps and sources.

Career Ready Practice Example



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Career Ready Practice

- **Manage personal career planning and development**

Industry Sector Anchor Standard

Career Planning and Management

Integrate multiple sources of career information from diverse formats to make informed career decisions and manage personal career plans.

- Identify personal interests, aptitudes, information, and skills necessary for informed career decision-making.
- Recognize the role and function of professional organizations, industry associations, and organized labor in a productive society.
- Understand how digital media is used by potential employers and postsecondary agencies to evaluate candidates.
- Develop a career plan that reflects career interests, pathways, and postsecondary options.
- Evaluate personal character traits such as trust, respect, and responsibility and understand the impact they can have on career success.



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CTE Anchor Standards

1. ACADEMICS
2. COMMUNICATIONS
3. CAREER PLANNING & MANAGEMENT
4. TECHNOLOGY
5. PROBLEM SOLVING & CRITICAL THINKING
6. HEALTH & SAFETY
7. RESPONSIBILITY & FLEXIBILITY
8. ETHICS & LEGAL RESPONSIBILITIES
9. LEADERSHIP & TEAMWORK
10. TECHNICAL KNOWLEDGE & SKILLS
11. DEMONSTRATION & APPLICATION



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Anchor Standards

Original Foundation Standard	ELA Common Core Standard	New CTE Anchor Standard
<p>2.0 Communications Students understand the principles of effective oral, written, and multimedia communications.</p>	<p>Listening & Speaking Acquire & use accurately general academic & domain-specific words & phrases, sufficient for reading, writing, speaking, and listening at the career & college readiness level (LS 11-12.6)</p>	<p>2.0 Communications Acquire & use accurately industry sector terminology & protocols for communicating effectively in oral, written, and multimedia formats. (deliberate alignment)</p>



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CTE Standards

Anchor Standard with Performance Indicators:

2. Communications

Acquire and use accurately industry sector terminology and protocols for communicating effectively in oral, written, and multimedia formats.

- Recognize the elements of accurate & appropriate communication.
- Identify barriers to accurate & appropriate communication.
- Interpret barriers to verbal & nonverbal communications & respond appropriately.
- Demonstrate elements of written & electronic communication such as accurate spelling, grammar & format.
- Advocate & practice, safe, legal and responsible use of digital media information & communication technologies.
- Communicate information & ideas effectively to multiple audiences using a variety of media & formats.



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California's 15 Industry Sectors:

- Agriculture & Natural Resources
- Arts, Media & Entertainment
- Building Trades & Construction
- Education, Child Development, & Family Services
- Energy & Utilities
- Engineering & Design
- Fashion & Interior Design
- Finance & Business
- Health Science & Medical Technology
- Hospitality, Tourism, & Recreation
- Information Technology
- Manufacturing & Product Development
- Marketing, Sales, & Service
- Public Services
- Transportation



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Pathway Standards

- Unique within an industry sector
- Organized by careers within the industry sector of similar functions, services, and work environments
- Describe what students should know and be able to do once the standards content is achieved
- Build from simple to complex knowledge and performance



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Identification Criteria

- Has an occupational focus
- Consistent in size and scope
- Comprised of similar functions
- Inclusive of all aspects of the industry
- Includes 8-12 pathway specific standards
- Demonstrates sequence potential
- Lead to high skill, high wage, or high demand jobs
- Reasonable and appropriate for high school
- Sustainable and viable over next 10 years



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CTE Pathways

New or significantly revised pathways:

- Business and Finance
- Energy and Utilities
- Health Science and Medical Technology
- Manufacturing and Product Development
- Marketing, Sales and Service
- Public Services
- Transportation



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Sample Pathway Changes

Energy and Utilities

- *Electromechanical Installation & Maintenance* → • *Power and Energy*
- *Energy & Environmental Technology* → • *Environmental Technologies & Energy*
- *Public Utilities* → • *Water Efficiency & Systems Management*
- *Residential & Commercial Energy & Utilities* → • *Voice & Data Communications*



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Sample Pathway Changes

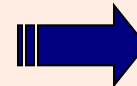
Transportation

- *Aviation & Aerospace*



- *Operations*

- *Collision Repair & Refinishing*



- *Structural Repair & Refinishing*

- *Vehicle Maintenance, Service & Repair*



- *Systems Diagnostics & Service*



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Sample Pathway Changes

Engineering and Design

- *Architectural and Structural Engineering* → • *Architectural Design*
- *Computer Hardware, Electrical, and Networking Engineering* → • *Moved to Information and Communications Technologies*
- *Engineering Design* → • *Engineering Technology*
- *Engineering Technology* → • *Engineering Design*
- *Environmental & Natural Science Engineering* → • *Environmental Engineering*



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Pathway Standards Alignment

Alignment Process:

- Identify pathway standards that have an obvious/natural alignment to a core curriculum standard
- Determine if the pathway standard will enhance, reinforce or apply a specific core subject standard
- Notate with a core standard code
Ex: Modeling with Geometry-1 Apply concepts of density based on area and volume in modeling situations (G-MG 1)

CTE Pathway Standards



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Public Services Sector

Legal and Government Services Pathway

Current Pathway Standard:

Students understand how to formulate plans and policies to meet social, economic, and physical needs (PS B4.0)

Common Core Reading Literacy Standard:

Integrate & evaluate multiple sources of information. . .in order to address a question or solve a problem (11-12.RSTS.7)

Revised Pathway Standard:

Integrate and evaluate multiple sources of information to formulate plans and policies to meet social, economic, and physical needs (deliberate)

Beyond Knowledge Hierarchy



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Analyze/Evaluate

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Understand/Apply

Construct meaning
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Remember

Retrieve knowledge,
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	X	X	

Performance

Level 1

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CTE Pathway Standards

Agriculture and Natural Resources Sector **Forestry and Natural Resources Pathway**

Current Standard:

Students understand the basic concepts of measurement, surveying and mapping (A & NR E11.0)

Geometry Standard:

Apply geometric concepts in modeling situations_(HS G-MG)

Revised Standard:

Apply geometric concepts of measurement, surveying and mapping (deliberate)



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CTE Standards

Agriculture and Natural Resources Sector

Current Standard:

Students understand the basic concepts of measurement, surveying and mapping (A & NR E11.0)

Current Subcomponent: Use surveying equipment, including global positioning satellites, maps and a compass to determine area, boundaries, and elevation differences (E11.2) (incidental)

Geometry Standard: Apply geometric concepts in modeling situations (HS G-MG)

1. Use geometric shapes, their measures, and their properties to describe objects.

Revised Standard:

Apply geometric concepts of measurement, surveying and mapping (deliberate)

Performance Indicator: Use survey equipment, including global positioning satellites, maps and a compass to measure and describe area, boundaries, and elevation differences (deliberate)



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Strategic Questions

- Does the state's CC implementation plan and team include Career Technical Education?
- What policy anchors exist in your state to ensure students are career and college ready?
- Is CTE available and accessible for all students?
- Is application integral to all courses?
- Are critical academic and career ready skills identified and taught in all classes including CTE?
- Are CTE instructors given opportunities to participate in sustained professional learning?



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Strategic Questions

- What standards are used to guide CTE curriculum development?
- Are CTE courses standards based?
- Are there defined Programs of Study that include academic and CTE courses?
- What processes and tools exist to assist districts and schools in developing integrated curricula?
- Is Perkins funding being used to assist in CC implementation?
- Are partnerships established with higher education to facilitate student transitions?



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Strategic Questions

- Is dual enrollment and dual credit authorized and utilized to assist students in reaching their goals?
- Are CTE courses utilized in determining college admission and placement?
- How are CTE pathways and courses used to increase student options?
- What alternative means for graduation are in place for students?
- Are there incentives and awards for students excelling in CTE programs?
- Are CTE student organizations supported?



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Strategic Questions

- Should the middle and high school course of study include career themes, pathways, or academies?
- How is Counseling and Guidance incorporated into CC implementation?
- What business involvement and investment exists to support CC implementation and CTE programs?
- Is structured work-based learning utilized?
- Are CTE courses designed to assist English language learners' achievement?
- Are adequate resources provided to support the implementation CTE involvement in CC?



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Resources

- Full text of the Common Core State Standards:
<http://www.scoe.net/castandards/index.html>
- Information about the common core: <http://www.corestandards.org/>
- Information about the common core including implementation timelines:
<http://www.cde.ca.gov/ci/cc/>
- PARCC information: <http://www.fldoe.org/parcc/>
- SBAC information: www.k12.wa.us/SMARTER
- Center for K-12 and Performance Management at ETS:
<http://www.k12center.org/publications.html>
- Career Technical Education Model Curriculum Standards & Framework
<http://www.cde.ca.gov/ci/ct/>
- Curriculum development and model lessons CTE Online:
<http://www.cteonline.org>
- California Career Resource Network (CalCRN):
<http://www.californiacareers.info>



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For More Information

Career and College Transition Division

Career Technical Education Administration and Management (CTEAM) office

Russ Weikle, Administrator

916-324-5676

rweikle@cde.ca.gov

Bev Campbell, Ed. Consultant

916-319-0491

bcampbell@cde.ca.gov