Career Clusters
Pathways to College & Career Readiness

The Modernized
National Career Clusters® Framework
2024 Fall Meeting Guidebook

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ADVANCE CTE
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Purpose Statement and Key Terminology

Purpose Statement

The National Career Clusters® Framework provides structural alignment and a common language to bridge education and work, empowering each learner to explore, decide on, and prepare for dynamic and evolving careers.

Key Terminology

Cluster Groupings (6)
Large purpose-driven meta-sectors that help guide learners toward Clusters that are aligned with their interests, their sense of purpose, and the impact they want to make on their communities.

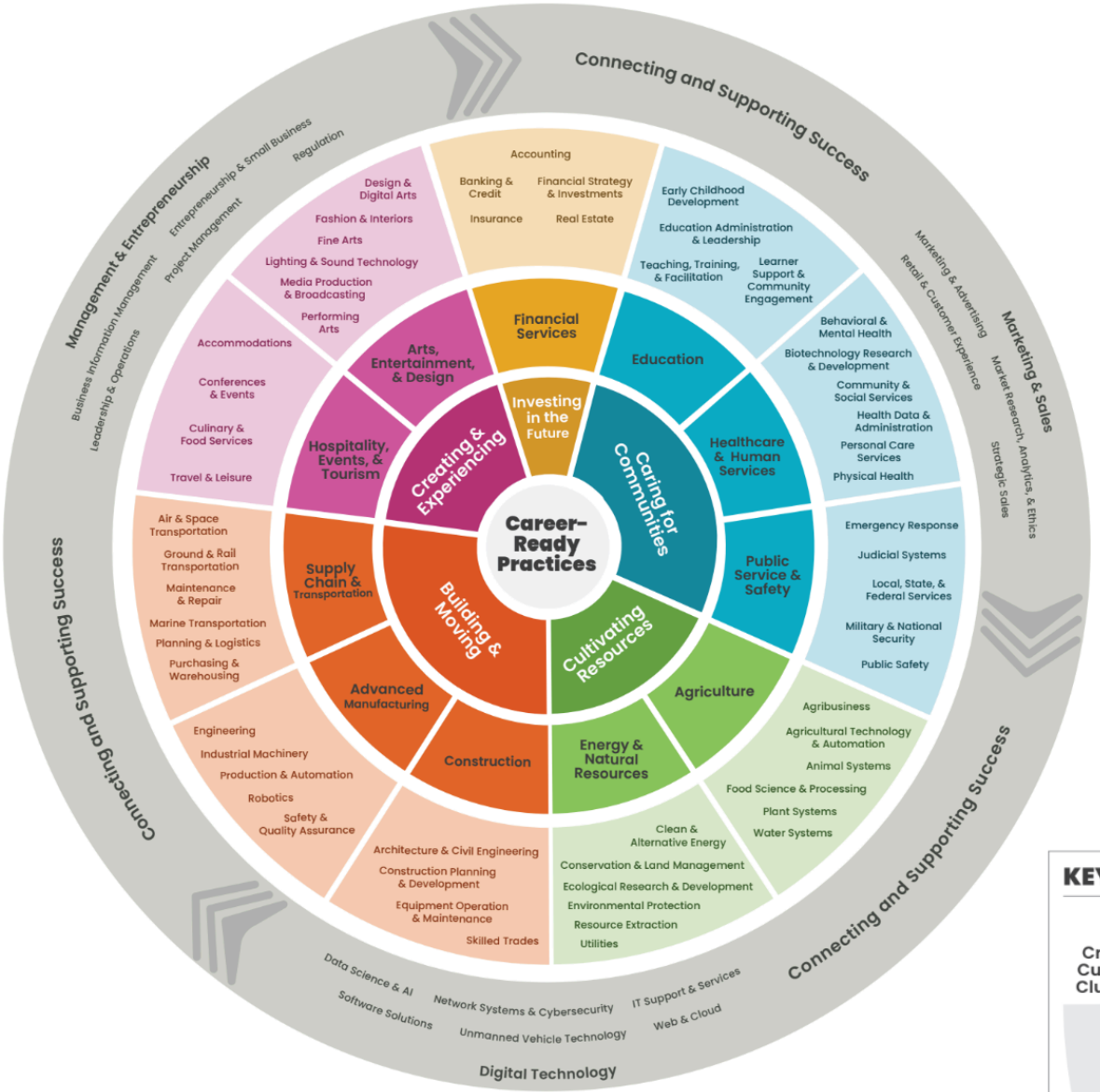
Career Clusters (14)
Industry sectors as defined by groupings from Standard Occupational Classification and North American Industry Classification System codes.

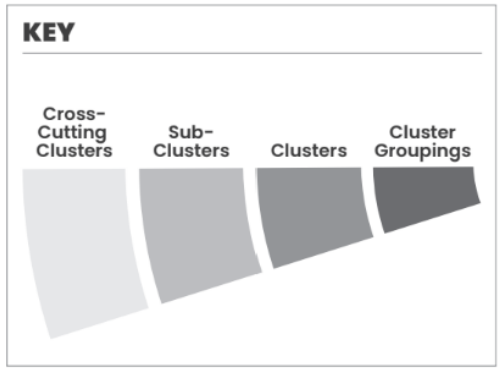
Sub-Clusters (72)
Major groupings of career areas within a given field that have similar skills as defined by industry area.

Cross-Cutting Clusters (3)
Clusters that are based on both sector-specific and contextualized functions instead of purely discrete industry sectors. These Clusters have both Sub-Clusters and implications for courses taken in all other Career Clusters.

Career Ready Practices (12)
The Career Ready Practices, built on a meta-analysis of over 30 different listings of general professional skills developed by industry and educational institutions, represent the skills needed to succeed in the modern workplace. . These practices should be embedded across the pre-kindergarten to workforce continuum.

The Framework: Wheel View





The Framework: Grid View

Caring for Communities

Education
- Early Childhood Development
- Education Administration & Leadership
- Learner Support & Community Engagement
- Teaching, Training, & Facilitation

Health Care & Human Services
- Behavioral & Mental Health
- Biotechnology Research & Development
- Community & Social Services
- Health Data & Administration
- Personal Care Services
- Physical Health

Public Service & Safety
- Emergency Response
- Judicial Systems
- Local, State, & Federal Services
- Military & National Security
- Public Safety

Building & Moving

Advanced Manufacturing
- Engineering
- Industrial Machinery
- Production & Automation
- Robotics
- Safety & Quality Assurance

Construction
- Architecture & Civil Engineering
- Construction Planning & Development
- Equipment Operation & Maintenance
- Skilled Trades

Supply Chain & Transportation
- Air & Space Transportation
- Ground & Rail Transportation
- Maintenance & Repair
- Marine Transportation
- Planning & Logistics
- Purchasing & Warehousing

Cross-Cutting Clusters

Digital Technology**
- Data Science & AI
- IT Support & Services
- Network Systems & Cybersecurity
- Software Solutions
- Unmanned Vehicle Technology
- Web & Cloud

Management & Entrepreneurship**
- Business Information Management
- Entrepreneurship & Small Business
- Leadership & Operations
- Project Management
- Regulation

Marketing & Sales**
- Market Research, Analytics, & Ethics
- Marketing & Advertising
- Retail & Customer Experience
- Strategic Sales

Creating & Experiencing

Arts, Entertainment, & Design
- Design & Digital Arts
- Fashion & Interiors
- Fine Arts
- Lighting & Sound Technology
- Media Production & Broadcasting
- Performing Arts

Hospitality, Events, & Tourism
- Accommodations
- Conferences & Events
- Culinary & Food Services
- Travel & Leisure

Cultivating Resources

Agriculture
- Agribusiness
- Agricultural Technology & Automation
- Animal Systems
- Food Science & Processing
- Plant Systems
- Water Systems

Energy & Natural Resources
- Clean & Alternative Energy
- Conservation & Land Management
- Ecological Research & Development
- Environmental Protection
- Resource Extraction
- Utilities

Investing in the Future

Financial Services
- Accounting
- Banking & Credit
- Financial Strategy & Investments
- Insurance
- Real Estate

****Cross-Cutting Clusters**
Denote careers that overlap in **all** industries, highlighting the versatile and interconnected nature of today's workforce. These careers can stand on their own or be contextualized in each Cluster and emphasize the need for adaptability in navigating the modern economy.

Notes:
Clusters are listed in alphabetical order. Clusters and Sub-Clusters represent the entire world of work (see definitions).

Programs of study are simply illustrative and will be determined by state and local frameworks.

Cross-Cutting Cluster **Digital Technology:** ***Modernizing Industries and Connecting Communities***	
Cluster Definition: The Digital Technology Career Cluster focuses on developing digital systems for communication and data storage using critical technologies such as artificial intelligence (AI), data analytics, and cybersecurity. This Cluster builds skills necessary for all careers to navigate and lead in the constantly evolving tech landscape and drives innovation across all industries to tackle complex challenges and opportunities in communities and economies.	
Sub-Clusters	**Example Programs of Study**
Data Science & Artificial Intelligence: Careers combining the power of data analysis, machine learning, and artificial intelligence (AI), including key processes such as data modeling and natural language processing. Professionals in this field apply critical thinking to work on innovative solutions to interpret vast amounts of information, automate decisionmaking processes, develop intelligent algorithms that improve with experience, and enhance communication between humans and machines. AI requires attention to ethical standards and is poised to revolutionize all industries by enhancing efficiency, personalizing experiences, and driving innovation.	Applied Data Science & Analytics
Information Technology (IT) Support & Services: Careers focused on providing setup, assistance, and problem-solving solutions for software, hardware, and other technology-related issues to ensure smooth and efficient operation of communication and data systems for individuals and organizations. This field is essential in maintaining, supporting, and optimizing technological infrastructure, ensuring minimal disruption and maximum efficiency.	Information Support & Services
Network Systems & Cybersecurity: Careers focused on establishing and managing communication networks and protecting them against cyber threats. This Sub-Cluster includes network setup, administration, and maintenance and the implementation of security measures to prevent unauthorized access and data breaches.	Computer Networking Cybersecurity IT Systems
Software Solutions: Careers involved in the development and maintenance of software solutions, built on computer science and encompassing programming, application development, and front-end and back-end software development. This Sub-Cluster also includes developing emerging technologies such as augmented and virtual reality, the Internet of Things, distributed ledger technologies, and quantum computing. It involves creating the underlying code and systems that power applications, designing user interfaces for optimal user experience, and building server-side technologies that process data behind the scenes.	App Design Computer Simulation Game Development Programming
Unmanned Vehicle Technology: Careers related to the development, operation, and use of unmanned vehicles, such as unmanned aerial vehicles, drones, and autonomous ground vehicles, across various sectors. Applications include aerial surveying, precision farming, search and rescue, delivery services, resource management, hazardous environment remediation, and infrastructure inspection. Professionals in this field engage in design, programming, data analysis, and operational management.	Drone Technology Unmanned Aircraft Systems
Web & Cloud: Careers focused on creating and managing websites and web applications, including front-end and back-end development and maintenance, as well as overseeing cloud services and infrastructure. This field merges software skills with user interface/user experience and cloud management expertise, ensuring website functionality, security, and cloud efficiency.	Cloud Computing Web & Digital Communications Web Development

Cross-Cutting Cluster Management & Entrepreneurship: ***Driving Business Success Across All Industries***	
Cluster Definition: The Management & Entrepreneurship Career Cluster involves skills and occupations that are essential across all industries, focusing on business administration, operations optimization, strategic planning, workforce management, and entrepreneurship. It merges key areas such as data management and analysis, human resources, general operations, administrative support, project management, and organizational leadership. This Cluster ensures that businesses across all industries efficiently meet their goals, adapt to market changes, and maintain competitive advantage. By emphasizing entrepreneurship, this Cluster supports the creation of new ventures, driving economic growth and innovation and making it a cornerstone of modern economies.	
Sub-Clusters	**Example Programs of Study**
Business Information Management: Careers centered around using technology to collect information that supports and enhances business operations. Professionals in this field gather, analyze, and interpret data to distill and recognize patterns, informing decisionmaking and optimizing performance. By integrating advanced technologies, professionals in this field streamline processes, improve operational efficiency, support strategic planning, and drive business growth in an increasingly global and information-centric environment.	Business Technology Applications
Entrepreneurship & Small Business: Careers focused on initiating and managing businesses, including startups, small businesses, gig economy work, and social enterprises. This field includes identifying opportunities, developing strategies, and securing financing, all with an emphasis on fostering innovation. Entrepreneurship and small businesses significantly affect all industry sectors by supporting employment and fostering innovation.	Entrepreneurship
Leadership & Operations: Careers involving the leadership of business activities, including strategic planning; resource forecasting and allocation; engaging with boards, shareholders, and other constituents; administrative support; and management consulting. This field also involves human resources management, recruitment, and employee development, fostering a positive work environment while optimizing processes and leading growth initiatives.	Business Essentials Business Management Human Resources Management
Project Management: Careers focused on planning, leading, initiating, executing, controlling, and closing out projects to achieve specific goals within a set timeline and budget. This field is essential in all industries as it ensures that projects are completed efficiently and effectively, aligning resources and efforts with strategic business objectives.	Principles of Management
Regulation: Careers dedicated to corporate responsibility, ensuring that all industries adhere to health, safety, financial, and environmental regulations. Professionals in this field develop and enforce policies, conduct inspections and audits, and implement measures to protect worker safety, public health, and the environment. This Sub-Cluster plays a crucial role in maintaining compliance and accountability across various sectors.	Business Law

Cross-Cutting Cluster Marketing & Sales: *Improving Communication and Connections*

Cluster Definition: The Marketing & Sales Career Cluster focuses on promoting products, understanding consumer needs, engaging with communities, and driving sales. It integrates digital marketing, data analysis, brand promotion, customer relationship management, strategic communications, human-centered design, and retail strategies to build strong customer connections and support business growth. This Cluster is essential in all industries for creating value, effectively reaching and engaging target audiences, and achieving commercial success in a competitive marketplace.

Sub-Clusters	Example Programs of Study
Market Research, Analytics, & Ethics: Careers focused on gathering, analyzing, and interpreting market data and consumer behaviors to inform strategic decisions and enhance business relationships. Professionals in this field use data analysis to understand market trends, competition, and customer interactions. This field aims to optimize customer retention and drive sales growth through informed strategies while maintaining awareness of ethical advertising practices, particularly those affecting the health and financial well-being of underserved populations.	Marketing Research Social Media & Analytics
Marketing & Advertising: Careers focused on using digital technologies and traditional strategies to promote products and services to engage customers and maintain brand identity. This Sub-Cluster includes leveraging online platforms, social media, and email marketing to communicate with audiences digitally. Professionals in this field design and manage brand advertising campaigns and promotions to enhance brand image and market position.	Marketing Marketing Management
Retail & Customer Experience: Careers focused on the essentials of retail operations and the delivery of outstanding customer experiences. This Sub-Cluster covers both physical and online store management, visual merchandising, inventory strategies, and customer service enhancement. Professionals in this field are prepared to drive retail success and customer satisfaction by creating engaging and personalized shopping experiences and enhance customer protection by educating consumers on correct product usage and unfair practices in the marketplace.	Merchandising
Strategic Sales: Careers that help businesses grow and achieve goals. This field covers setting targets, refining sales processes, leading teams, and prioritizing excellent customer service in direct sales. Professionals in this field specialize in business development, partnership building, and customer engagement, adapting to the dynamic demands of today's marketplace.	Business Communications

Advanced Manufacturing: *Engineering and Producing Tomorrow's Solutions*

Cluster Definition: The Advanced Manufacturing Career Cluster blends innovative technologies and practices to enhance design and production. It covers areas such as engineering, research and development, automation and artificial intelligence, equipment maintenance, safety protocols, and quality control. This Cluster aims to increase efficiency, reduce waste, ensure safety, and produce high-quality goods, driving the industry's growth and adapting to modern demands.

Sub-Clusters	Example Programs of Study
Engineering: Careers that use engineering principles to develop and improve manufacturing processes and systems and to design products. Professionals in this field tackle production challenges, boost efficiency, leverage advanced technologies, and contribute to the sector's advancement. The manufacturing sector encompasses numerous types of engineering, including mechanical, electrical, chemical, biopharmaceutical, materials, and industrial. This Sub-Cluster also involves research and development and prototyping for emerging products and systems.	Engineering & Technology Pre-Engineering Semiconductor Manufacturing Engineering Technology
Industrial Machinery: Careers focused on working with manual equipment, such as computer-numerical-controlled (CNC) machines, 3D printers, quality control equipment, material handling tools, maintenance and repair devices, specialized machining and surface treatment machines, fabrication equipment, and energy management systems. Professionals in this field set up, operate, maintain, and repair advanced machinery, ensuring efficient and safe performance.	Industrial Machine Mechanics Precision Machining
Production & Automation: Careers centered on the hands-on management and execution of manufacturing processes. This field involves automation, overseeing production lines, quality control, assembly and product finishing, and ensuring efficient workflow. This Sub-Cluster includes specialized sectors such as processed food and beverage production and textile manufacturing, emphasizing efficiency and adherence to industry standards across diverse production types.	Apparel & Textile Production Manufacturing Production Process Development
Robotics: Careers involved in developing, implementing, and maintaining technologies that deploy robotics. This field encompasses roles focused on programming robots; overseeing production lines enhanced by robotics, mechatronics, and smart manufacturing concepts; and ensuring that these technologies operate efficiently and safely.	Industry 4.0 Robotics Technology
Safety & Quality Assurance: Careers dedicated to ensuring workplace safety, worker health, environmental compliance, and product quality. Professionals in this field develop and implement standards and practices to maintain safe and sustainable operations while conducting rigorous testing and inspections to uphold product integrity.	Safety & Environmental Assurance

Agriculture: *Cultivating Sustainability and Nourishing the World*

Cluster Definition: The Agriculture Career Cluster concentrates on scientific advancement of agriscience, cultivation, processing, and distribution of agricultural products, employing advanced technologies and sustainable practices to optimize global food systems. This Cluster also supports other plant- and animal-based industries including regenerative agriculture, sustainable logging, and fisheries. This Cluster has meaningful connections with the Energy and Natural Resources Cluster, highlighting a symbiotic relationship that emphasizes stewardship and resilient communities.

Sub-Clusters	Example Programs of Study
Agribusiness: Careers focused on the economic aspects of agriculture, encompassing farm and rangeland management, agribusiness finance, international relations, supply chain management, and other functions that are essential for agricultural profitability. Professionals in this field manage farms and ranches of various scales and oversee agricultural finances, which are crucial functions for profitable and sustainable agricultural enterprises.	Agribusiness Agricultural Policy Agricultural Finance
Agricultural Technology & Automation: Careers at the intersection of agriculture and technology, focusing on the design and operation of agricultural equipment and systems; repair and maintenance of agricultural equipment; and agricultural engineering, mechanics, and automation processes. This Sub-Cluster includes innovative farming methods such as precision, urban, and vertical farming to increase efficiency, productivity, and sustainability in agriculture.	Agricultural Technology Precision Agriculture Urban Farming Agricultural Mechanics
Animal Systems: Careers that both promote the health and well-being of animals, including companion, livestock, and exotic animals, and facilitate the efficient production of animal-related products within the food system. For livestock and poultry, professionals in this field aim to optimize the production of meat, dairy, eggs, and other animal products. Careers in this field also include veterinary and other services to manage the care, breeding, behavior, enrichment, and management of animals. This Sub-Cluster also incorporates genetics, nutrition, biotechnology, and pharmaceuticals to improve animal welfare and production efficiency.	Animal Nutrition Livestock Management Veterinary Science
Food Science & Processing: Careers centered on applying scientific and technological principles to the development, enhancement, processing, and usability of agricultural food products. Professionals in this field work with fruit, vegetable, grain, and meat processing, ensuring that these products are nutritious and safe for consumption. This Sub-Cluster is crucial in maintaining quality control and nutritional value, enhancing product freshness, and meeting consumer and regulatory standards.	Food Science Meat Science Sustainable Food & Farming
Plant Systems: Careers involving the study and management of plant growth, soil health, and pest management, focusing on sustainable crop production for both food and goods. This Sub-Cluster includes careers in agronomy, horticulture, timber and plant fiber harvesting, and soil science that are aimed at enhancing crop yields, preserving soil resources, and developing advanced production practices.	Horticulture Forestry Plant Science Floriculture
Water Systems: Careers centered on the effective management and use of water resources in agricultural settings, including precision irrigation, aquaculture, and fisheries. Professionals in this field are dedicated to maximizing water efficiency and productivity in farming operations to enhance crop yield and support sustainable fish farming practices.	Aquaculture Marine Biology

Arts, Entertainment, & Design: *Inspiring Creativity, Innovation, and Artistry*

Cluster Definition: The Arts, Entertainment, & Design Career Cluster combines creative roles in visual and performing arts, film, journalism, fashion, interior design, and creative technologies. This Cluster focuses on creating, producing, and sharing artistic and design work across multiple platforms, aiming to entertain, inform, beautify, and inspire.

Sub-Clusters	Example Programs of Study
Design & Digital Arts: Careers encompassing the creation and production of visually engaging digital content such as animation, visual marketing, graphic design, print media, augmented and virtual reality, web design, game design, and user interfaces/user experiences. This Sub-Cluster combines artistic talent and technology to produce interactive content, entertainment, commercial product and packaging design, and promotional materials.	Digital Animation Graphic Arts
Fashion & Interiors: Careers bridging the creative and commercial aspects of fashion design, production, marketing, and sales with the art and science of interior design and decoration. Professionals in this field are dedicated to creating, promoting, and selling apparel, accessories, footwear, costuming, and textiles. Interior design careers focus on designing, improving, and decorating interior spaces through space layout and materiality with the goal of enhancing functionality and esthetic appeal.	Apparel & Textiles Fashion Design Interior Design
Fine Arts: Careers focused on the technical and artistic skill needed for the creation, promotion, and sale of visual art forms including painting, sculpture, and pottery. Professionals in this field focus on producing works that not only possess esthetic value but also serve as mediums for expression, and they are involved in every stage from conceptualization to exhibition, ensuring that art is accessible and resonates deeply with audiences.	Fine Arts Museum Studies
Lighting & Sound Technology: Careers specializing in sound engineering and lighting design, which are vital for both functional and artistic applications, including immersive experiences in film, music, performing arts, fine arts, and interiors. Professionals in this field adeptly manipulate sound and light to set moods, highlight themes, and enhance audience engagement, contributing significantly to the success and impact of artistic and design endeavors.	Audio & Visual Technology Lighting Design Sound Engineering
Media Production & Broadcasting: Careers encompassing film, television, radio, journalism, communications, writing, and broadcasting, focusing on content creation, production, and distribution. This field includes direction, production, cinematography, and publishing, emphasizing storytelling and technical expertise. This Sub-Cluster also highlights the impact and ethical use of emerging technologies, including artificial intelligence, in enhancing visual effects and streamlining production. Broadcasting includes digital technologies such as streaming and podcasting, transforming audience engagement and content consumption.	Broadcasting Technology Filmmaking: Production & Managerial Arts Journalism Video Production
Performing Arts: Careers focused on the technical and management elements of the performing arts and entertainment industry to produce and stage live artistic and athletic performances, including theater, music, dance, and sports. This Sub-Cluster encompasses the core creative and artistic talents coming from actors, musicians, dancers, and other performers intended to entertain, inform, and provoke thought in audiences. It also covers a wide range of genres and styles and plays a vital role in cultural preservation, expression, & entertainment.	Performing Arts Stage Design & Management

Construction: *Building Futures and Pioneering Sustainable Horizons*

Cluster Definition: The Construction Career Cluster focuses on professions involved in designing, planning, managing, and executing projects in the built environment. It emphasizes sustainable building practices to ensure that structures are both environmentally responsible and resilient. Careers in this Cluster are pivotal in creating durable infrastructure that meets present needs without compromising future generations' ability to meet their own, covering a range of roles from architects and engineers to construction managers and skilled tradespeople.

Sub-Clusters	Example Programs of Study
Architecture & Civil Engineering: Careers combining the planning, design, and drafting of infrastructure, structures, and landscapes with the application of technical expertise through architecture and civil and structural engineering. Professionals in this field develop sustainable, safe, and esthetically pleasing spaces while ensuring compliance with regulations. This Subc-Cluster spans residential, commercial, industrial, and public infrastructure projects, requiring a blend of creativity, technical precision, and problem-solving to meet modern societal and environmental challenges.	Architectural Design Drafting Landscape Architecture
Construction Planning & Development: Careers emphasizing the critical initial stages of construction and development projects, including preconstruction activities, property development, and land use planning. This field involves site analysis, surveying, cost estimation, securing required permits, conducting feasibility studies, environmental compliance, and construction management. Professionals in this field engage in meticulous planning and preparation to integrate sustainable practices and reduce potential risks and delays, ensuring project success from start to finish.	Construction Management Surveying
Equipment Operation & Maintenance: Careers skilled in managing and servicing the heavy equipment and machinery that are essential for building and infrastructure projects. Professionals in this field ensure that these vital tools operate efficiently and safely, combining technical knowledge with mechanical skills. This Sub-Cluster is crucial for the smooth execution of construction tasks, maintenance of machinery reliability, and adherence to safety standards.	Diesel Mechanics Heavy Machine Operation
Skilled Trades: Careers focused on skilled work that is essential to constructing, maintaining, and repairing buildings and infrastructure including carpentry; welding; masonry; electrical; plumbing; and heating, ventilation, air conditioning, and refrigeration (HVAC-R). Professionals in the skilled trades play a key role in shaping the environment, combining hands-on skills with technical knowledge to ensure functionality and safety in both new and existing infrastructure and structures. Many skilled trades are also in high demand in the Advanced Manufacturing, Agriculture, and Energy and Natural Resources Clusters.	Carpentry Electrical Systems Green Construction HVAC-R Welding Technology

Education: *Transforming Lives and Enriching Futures Through Lifelong Learning*

Cluster Definition: The Education Career Cluster spans careers aimed at fostering learning from early childhood to adulthood, including teaching, instructional design, counseling services, community engagement, learner support, and educator training. This Cluster emphasizes quality education standards and lifelong learning, preparing individuals for success through all life stages by nurturing knowledge, skills, and critical thinking and encouraging personal and societal growth in a constantly evolving world.

Sub-Clusters	Example Programs of Study
Early Childhood Development: Careers dedicated to nurturing the holistic growth of children from birth to 8 years old through education, care, and early intervention. Professionals in this field specialize in fostering physical, cognitive, emotional, and social development in early learners by applying proven and promising strategies for whole-child wellness.	Early Childhood Education Developmental Education
Education Administration & Leadership: Careers in managing and leading educational institutions, developing policies, curating and organizing knowledge, leading teams, and conducting research to improve education. This Subluster includes school and district administration, policy analysis, and research focused on optimizing school functions, implementing policies, and exploring ways to enhance learning. Professionals in this field work to ensure the effective operation of educational settings and promote continuous improvement through research and innovation.	Educational Leadership
Learner Support & Community Engagement: Careers focused on offering guidance and support to learners while building collaborative ties with families and communities. This field includes academic advising, library sciences, student health and wellness counseling, special education support, student life services in higher education, coaching, and career guidance within a school setting. This Sub-Cluster also includes community engagement practices that involve families, industry, and local resources for opportunities such as family support programs, work-based learning, and apprenticeships.	Professional Support Services Library Science
Teaching, Training & Facilitation: Careers encompassing teaching and instructional design roles across diverse educational levels, from kindergarten through Grade 12 (K-12) to adult learning. This field includes integrating educational technology and emerging teaching methods into curriculum development and delivery. Careers in this Sub-Cluster also involve providing professional development and training for educators while facilitating learning experiences, and they involve providing coaching for individuals and groups. This field promotes lifelong learning in various settings, including schools, colleges, corporate environments, and community organizations.	Principles of Teaching

Energy & Natural Resources: *Powering Progress and Preserving Our Planet*

Cluster Definition: The Energy & Natural Resources Career Cluster spans careers in traditional and renewable fuel production, power generation and energy conversion, utilities, environmental preservation, ecological research, and resource extraction. These industries focus on efficient and responsible resource management, including conservation, transmission, distribution and storage, to minimize environmental impacts and meet global energy needs. Careers in this Cluster are dedicated to creating a sustainable future, innovating cleaner energy solutions, and preserving our planet's natural resources for generations to come.

Sub-Clusters	Example Programs of Study
Clean & Alternative Energy: Careers focused on energy generation and infrastructure development from clean energy sources such as low carbon fuels, natural gas, nuclear, biofuels, hydrogen processes, and other alternative sources aimed at addressing climate change impacts. Professionals in this field develop and implement technologies that harness natural elements including solar, nuclear, wind, and hydro power, while advancing efforts in electrification and energy storage solutions. This Sub-Cluster also includes recycling of batteries and waste, carbon capture, and other energy and mineral reuse and reclamation.	Renewable Energy Electric Vehicle Installation & Maintenance Solar System Design & Installation Wind Turbine Installation & Maintenance
Conservation & Land Management: Careers rooted in environmental and natural sciences, focusing on protecting and managing natural resources and landscapes. Professionals in this field operate local, state, and national parks; safeguard forests and waterways; maintain national lands and rangelands; and manage wildlife and marine life. This field merges ecological conservation with recreational spaces, aiming to preserve nature while enhancing community well-being and environmental stewardship through public accessibility.	GIS Mapping Natural Resource Conservation Wildlife Management
Ecological Research & Development: Careers emphasizing the scientific study of and research in ecological, geological, electrical, chemical, nuclear, biological, environmental engineering, and other sciences as they relate to energy production, sustainability, and the management of natural resources. Professionals in this field employ scientific methods to understand ecosystems, biodiversity, and the impacts of energy systems on the environment.	Environmental Engineering Environmental Management Environmental Science & Sustainability
Environmental Protection: Careers centered on regulating and managing the impacts of both natural processes and human activities, such as resource production and consumption. This Sub-Cluster involves developing and enforcing policies to protect all ecosystems, including space, air, land, and water, from natural disasters, pollution, and degradation. This field focuses on conserving natural habitats and biodiversity and applying scientific and engineering principles to solve environmental problems and improve climate resilience.	Climate Resilience Sustainable Communities
Resource Extraction: Careers focused on the efficient extraction of natural materials including fossil fuels, minerals, natural gas, and geothermal resources that are essential for fuel production in energy and manufacturing. This Sub-Cluster includes careers in exploration, drilling, mining, fracking, mineral processing, geoscience, quarrying, and petroleum engineering.	Clean Energy System Design Energy Transfer Mining Technology
Utilities: Careers involving the transmission and maintenance of utility systems for clean and alternative energy, electricity, water, waste remediation, and telecom/broadband; distribution and infrastructure development; and storage. Professionals in	Telecommunications Water & Wastewater Systems

this field ensure reliable connectivity to energy sources, energy efficiency, and other essential services. Opportunities exist in public utilities, as well as commercial and industrial companies, with a focus on operations, maintenance, and security of systems to guarantee uninterrupted access to vital resources.	Plant Operations Underground or Overhead Linework Utility Maintenance and Repair

Financial Services: *Empowering Financial Resilience*

Cluster Definition: The Financial Services Career Cluster encompasses careers in managing and advising financial transactions, including banking, lending, corporate finance, debt management, accounting, insurance, and real estate. These careers contribute to economic stability and growth by supporting the financial health of individuals and organizations.

Sub-Clusters	Example Programs of Study
Accounting: Careers focused on managing financial records for individuals and businesses and advising on individual and family financial planning and debt management. This field includes accountants, who ensure financial accuracy and compliance, and personal finance advisors, who guide individuals in savings, investments, and retirement planning. This Sub-Cluster also includes financial auditors and forensic accountants, who play a crucial role in this field by ensuring the integrity and reliability of financial information through comprehensive audits and assessments.	Accounting Business Finance Economics
Banking & Credit: Careers centered on money management, loans, microlending, and commercial and consumer credit across banks, credit unions, mortgage brokers, and finance companies. Professionals in this field have expertise in evaluating creditworthiness, managing loans, providing financial solutions to facilitate access to capital for individuals and businesses, and ensuring compliance with financial regulations.	Banking Credit
Financial Strategy & Investments: Careers involved in managing a company's capital structure and corporate financial strategies, operations, and investments, including venture capital and private equity. This field also includes careers focused on the acquisition of investment offerings such as stocks, bonds, fixed-income products, pension plans, emerging digital assets, and other resources aimed at income generation or asset appreciation. The Sub-Cluster encompasses tactics for small business fundraising and financing via microlending and operational scaling and for devising exit strategies to evolve startups into sustainable enterprises. Professionals in this field ensure that financial practices and transactions adhere to legal and ethical standards.	Business Administration Securities & Investments
Insurance: Careers rooted in assessing risk; providing financial protection against loss; and offering products including life, health, and property insurance. Professionals in this field hold expertise in analysis and the ability to evaluate risk factors, investigate and process claims, create risk management strategies, and ensure compliance with industry regulations. This field uses applied mathematics and statistics to predict future events and design viable insurance policies.	Insurance Operations
Real Estate: Careers focused on the buying, selling, leasing, and management of residential, commercial, and industrial properties. Professionals in this field navigate the complex landscape of licensing, fair housing, zoning, environmental regulations, health, safety, and financial laws to facilitate legal and ethical property transactions.	Real Estate

Healthcare & Human Services: *Supporting the Whole Health of Individuals, Families, and Communities*

Cluster Definition: The Healthcare & Human Services Career Cluster promotes whole health in individuals and communities through a diverse array of services. This sector includes technical, mental, and therapeutic services and personal care, supported by medical and social sciences. By addressing social determinants of health and leveraging health data and science, this Cluster aims to enhance the overall health and resilience of individuals, families, and communities.

Sub-Clusters	Example Programs of Study
Behavioral & Mental Health: Careers dedicated to mental and emotional well-being, including counseling, psychology, and psychiatric services aimed at supporting individuals through mental health challenges and promoting psychological health. Professionals in this field play a critical role in diagnosing and treating mental health disorders, providing therapy, developing strategies to improve overall mental wellness, and advocating for mental health awareness and policy changes.	Counseling & Mental Health Services
Biotechnology Research & Development: Careers focused on research and development in the medical field, including biotechnology, and scientific research. Professionals in this field develop new treatments, pharmaceuticals, devices, and innovative medical technologies to advance healthcare.	Biomedical Science Biotechnology Research & Development
Community & Social Services: Careers that address the societal and environmental factors affecting health such as access to healthy foods, income and poverty, adequate child care, and access to education. This field includes work in public services, social work and case management, or nonprofit sectors with missions to address social inequalities and provide support services for all age ranges. This Sub-Cluster also includes clergy and spiritual support roles, which provide emotional and spiritual guidance to individuals and communities.	Community Health Human Services Social Work
Health Data & Administration: Careers centered on the management, analysis, and administration of health information and data. This Sub-Cluster encompasses fields such as health informatics, medical records, and healthcare administration. Professionals in this field are dedicated to enhancing healthcare delivery through effective technology and data management.	Health Informatics Medical Assisting Medical Record Keeping
Personal Care Services: Careers that encompass in-home and personal care support and offer esthetics and wellness services such as hairdressing, nail care, skincare, fitness, and massage therapy. Professionals in this field focus on enhancing personal appearance and promoting relaxation and well-being while remaining grounded in a thorough understanding of health and safety practices.	Barbering Cosmetology Massage & Spa Services
Physical Health: Careers in healthcare that directly affect the physical well-being of individuals by providing medical care, conducting diagnostics, offering therapeutic services, administering pharmaceuticals, and supporting nutrition and dental health. This Sub-Cluster encompasses healthcare from prebirth to death, addressing all stages from pediatrics to geriatrics and mortuary sciences. It also includes careers that offer alternative and complementary health services such as homeopathy, acupuncture, and others that focus on the holistic well-being of individuals.	Allied Health Nursing Pharmacy Tech Physical Therapy Radiology Sports Medicine

Hospitality, Events & Tourism: *Unlocking Adventures and Elevating Experiences*

Cluster Definition: The Hospitality, Events, & Tourism Career Cluster encompasses a broad range of services and experiences related to food and beverage, lodging, travel, events, and conferences. This Cluster focuses on delivering quality customer service, memorable experiences, and seamless logistics to cater to the needs and preferences of guests, tourists, and event participants. The Cluster is characterized by its diversity, including everything from luxury hotels and international travel to local dining, cultural events, and business conferences, aiming to enhance the overall experience of visitors and attendees.

Sub-Clusters	Example Programs of Study
Accommodations: Careers that support, operate, and manage businesses and services related to temporary lodging, including hotels, motels, resorts, short-term rentals, and bed-and-breakfast establishments, focusing on providing guests with a comfortable and safe stay. Through advanced technology, hotel and resort management leverages sophisticated property management systems, online booking platforms, mobile-friendly services, and personalized guest experiences.	Hospitality Management Hotel & Resort Management
Conferences & Events: Careers encompassing the planning, coordination, and execution of various events and conferences. This Sub-Cluster involves organizing conventions; trade shows; and corporate, political, and personal events generating positive economic impact to communities. This field includes logistics, venue management, vendor coordination, budgeting, attendee management, marketing, and risk management. Professionals in this field require strong organizational, creative, and interpersonal skills to ensure the success of events and provide a positive experience for participants.	Conference Planning Event Management
Culinary & Food Services: Careers dedicated to the service, operation, and management of establishments involved in the preparation and serving of food and drinks with significant emphasis on providing exceptional culinary experiences and delivering high-quality customer service. These establishments vary widely, encompassing independently owned restaurants, nationwide restaurant chains, noncommercial dining facilities, bakeries, and catering services. Professionals in this Sub-Cluster span all aspects and levels of food preparation, including beverage specializations, as well as restaurant management, operations support, and health and safety.	Culinary Services Nutrition Pastry Arts Restaurant Management
Travel & Leisure: Careers focused on facilitating enjoyable travel, entertainment, and recreational activities. This Sub-Cluster includes travel services provided by agencies, ecotourism, agritourism, and cultural tourism, as well as entertainment at attractions including theme parks and museums. This field also involves the organization of sports events, maintenance of outdoor recreation venues and field management, and ethical management of gaming and betting operations.	Outdoor Recreation Tourism Management

Public Service & Safety: *Shaping, Serving, and Protecting Our Communities*

Cluster Definition: The Public Service & Safety Career Cluster encompasses roles in local, state, and federal government; legal and justice systems; security; and military operations, all aimed at promoting civic responsibility and ensuring the well-being, security, functionality, and resilience of communities, states, and countries.

Sub-Clusters	Example Programs of Study
Emergency Response: Careers focused on strategic actions taken to prepare for and manage crises and emergencies, including natural disasters, fires, accidents, and other urgent situations. Careers in this field involve training in rapid assessment, effective communication, and critical decisionmaking to mitigate risks, provide urgent medical services, and coordinate recovery efforts. This Sub-Cluster includes work in various settings, from government agencies to private organizations, that play a crucial role in safeguarding public health and safety.	Emergency & Fire Management Services Fire Science
Judicial Systems: Careers dedicated to maintaining the legal system, upholding justice, fairness, and the rule of law for both individuals and organizations. This Sub-Cluster encompasses a wide range of professions within the legal framework and court systems, focusing on ensuring that legal processes and justice delivery are carried out effectively and efficiently.	Legal Studies Paralegal & Legal Assistant Training
Local, State & Federal Services: Careers in government agencies responsible for policy and economic development, ensuring democratic processes, access to public services, governance, public administration, public policy, urban and regional planning, and community development. This field delivers services that support the protection of public goods and community resources such as local parks, libraries, and recreation centers and promote the well-being, stability, and sustainable growth of communities and their residents.	Economics Public Management & Administration Regional & Urban Planning
Military & National Security: Careers centered on safeguarding countries through defense operations, strategic planning, intelligence gathering, and technological resilience. Professionals in this field prevent threats and ensure citizens' safety while serving in the military, government, or private sector, playing a crucial role in maintaining national stability and preparedness.	National Security
Public Safety: Careers in law enforcement, corrections, and both public and private security. This Sub-Cluster focuses on safeguarding communities, managing correctional and rehabilitation facilities, and providing comprehensive protective services. Professionals in this field work to prevent crime, inform and educate citizens, and ensure public order, contributing to the overall safety and well-being of society.	Criminal Justice Law Enforcement Services Security & Protective Services

Supply Chain & Transportation: *Driving Efficiency and Streamlining Tomorrow's Transport*

Cluster Definition: The Supply Chain & Transportation Career Cluster encompasses the transfer, coordination, and management of goods from production to consumption, ensuring efficient movement across various modes of transportation including air, ground, and water, as well as maintenance of the respective transport modes. This Cluster integrates logistics and distribution networks to facilitate the seamless flow of materials and products, playing a crucial role in global commerce, economic development, and community health.

Sub-Clusters	Example Programs of Study
Air & Space Transportation: Careers related to the design, operation, and management of both air and space transportation, including air cargo and passenger services, as well as space exploration and satellite operations. This field incorporates the maintenance of electrical equipment such as radios, navigation equipment, and autopilot systems. Careers in this field ensure the safety and efficiency of air transport and advance space travel and research. This Sub-Cluster also includes managing flight operations and air traffic, designing aerospace systems, and conducting space exploration.	Aviation Technology Avionics "Your Place in Space" Department of Education Program
Ground & Rail Transportation: Careers related to the transportation of goods and passengers by road and rail. This field includes the design, operation, and management of automotive, trucking, rail operations, and logistics services, focusing on efficient and safe ground transport. Professionals in the field of rail operations work in a variety of settings from urban transit systems, such as subways and light rail, to cross-country freight and high-speed passenger trains, emphasizing the diverse yet specialized skills required to meet a wide range of transportation needs.	Commercial Driving Railroad Operations
Maintenance & Repair: Careers encompassing the repair and maintenance of transportation systems, including ground vehicles, rail vehicles, aircraft, and nautical vessels. This field also integrates specialized areas such as auto body and engine repair and is increasingly influenced by advancements in technology, including the maintenance of electric vehicles and systems for autonomous driving. Professionals in this field ensure that all forms of transportation equipment operate safely and efficiently, adapting to new technologies to meet evolving demands.	Auto Body Technology Automotive Maintenance Diesel Mechanics Electric Vehicle Maintenance
Marine Transportation: Careers in the design, operation, and management of maritime vessels and infrastructure for the transportation of goods and passengers, and watercraft used in sports and leisure activities. Professionals in this field engage in managing ship navigation; engineering marine systems; overseeing port operations; and ensuring the safety and maintenance of recreational vessels such as yachts, human-powered craft, and water powersport vehicles.	Marine Transport Vessel Operations
Planning & Logistics: Careers focused on managing and optimizing the supply chain's flow of goods and information. This Sub-Cluster encompasses roles in transportation planning, supply chain coordination, and efficient material sourcing, all aimed at enhancing efficiency, minimizing waste, ensuring safety, and facilitating timely delivery. This field integrates modern technologies to improve production, drive innovation, and maintain competitiveness in global trade systems. It also includes urban and regional planning for transit, further supporting effective transportation and logistics.	Transportation, Distribution, & Logistics Systems
Purchasing & Warehousing: Careers centered around procurement, warehousing, and facility maintenance. Professionals in procurement negotiate contracts and purchases as well as manage supplier relationships. Warehousing includes careers that oversee efficient storage, dispatch, and inventory control of goods. Professionals in facility maintenance manage supply chain facilities, ensuring operational efficiency and compliance with safety regulations.	Business Administration Supply Chain Management

Crosswalk From Old Framework to Modernized Framework—Clusters Only

Original Cluster	New Cluster
Agriculture, Food & Natural Resources	Agriculture
Architecture & Construction	Construction
Arts, A/V Technology & Communications	Arts, Entertainment, & Design
Business Management & Administration	Management & Entrepreneurship
Education & Training	Education
Finance	Financial Services
Government and Public Administration	**COMBINED** into Public Service & Safety
Health Science	**COMBINED** into Healthcare & Human Services
Hospitality and Tourism	Hospitality, Events & Tourism
Human Services	**COMBINED INTO** Healthcare & Human Services
Information Technology	Digital Technology
Law, Public Safety, Corrections & Security	**COMBINED** into Public Service & Safety
Manufacturing	Advanced Manufacturing
Marketing	Marketing & Sales
STEM	**Removed**—Engineering was primarily placed in Adv. Manufacturing
Transportation, Distribution and Logistics	Supply Chain & Transportation
None	Energy & Natural Resources

Activity: Modernizing the National Career Clusters® Framework

Overview

These pages will help you collect notes that you and your team can use to identify what changes you may need to make to your systems, and what conversations you need to have about the modernized Career Clusters to support their implementation. Throughout the meeting, consider the following questions and discuss with your teams, other state leaders, and Career Technical Education (CTE) partners while you have the time to do so!

Potential Questions to Explore

- Implementation
    - What is the timeline you hope to update your systems to align with the modernized Career Clusters?
    - When do you hope for a full rollout of the adopted Framework statewide?
    - What parts of your system are impacted by an initial implementation? Consider teacher credentialing, data reporting and accountability, secondary/postsecondary alignment, program approval, and employer engagement as a starting point.
    - What formal policies might you have to change as a part of this implementation?
    - What regulation or legislation might you have to change?
- Conversations and Messaging
    - Who do you need to have preliminary conversations with at the state level? Consider other state agencies, state-level partners, and statewide support organizations.
    - Who do you need to have preliminary conversations with at the local level? Consider your local secondary and postsecondary agencies who may be impacted.
    - How do you intend on messaging any changes to encourage a proactive change management approach?
- Resources
    - What information or support might you need from Advance CTE? Do you know where to find that information?
    - What resources might you need to create specific to your state about any changes you intend on making?
    - What other organizations might you reach out to for Career Cluster- or sector-specific information?

Ideation Session Notes

Teacher/Instructor Credentialing

Data Systems

Individualized/Interdisciplinary Pathways & Programs of Study

Postsecondary/Workforce Usage

Aligning to Labor Market Information

Other Considerations or Policy Changes


Career Clusters
Pathways to College & Career Readiness