STATE OF ILLINOIS

Model Programs of Study Guide

DRAFT

Architecture, Construction, and Energy

COLLEGE & CAREER PATHWAYS

ICCB
ILLINOIS COMMUNITY COLLEGE BOARD

EdSystems
EDUCATION SYSTEMS CENTER at NORTHERN ILLINOIS UNIVERSITY

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About ICCB

In 1965, the Illinois General Assembly established the Illinois Community College Board to create a system of public community colleges that would be within easy reach of every resident. Today, the Illinois Community College System covers the entire state with 48 colleges and one multi-community college center in 39 community college districts. Community colleges serve nearly one million Illinois residents each year in credit and noncredit courses and many more through their public service programs.

Illinois' community colleges meet both local and statewide needs for education and workforce development through high-quality, affordable, accessible, and cost-effective programs and services. Learn more at iccb.org.

About EdSystems

Education Systems Center (EdSystems) is a mission-driven policy development and program implementation center based within Northern Illinois University. We work at the state level to create ecosystem and policy change while simultaneously working at the local level to create organizational change. This bi-directional approach allows us to align local efforts to state policy while elevating local experiences and learnings to state tables. Learn more at edsystemsniu.org.

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I. About the Model Programs of Study Guide

The Illinois Community College Board (ICCB) sponsored the development of the State of Illinois Model Programs of Study Guides in crucial industry areas as part of the "Illinois State Plan for Strengthening Career and Technical Education for the 21st Century Act" (also known as the Perkins V plan). This guide was developed in consultation and collaboration with the Illinois State Board of Education (ISBE) through a process led and facilitated by Education Systems Center at NIU (EdSystems). As further detailed in this guide, the process involved extensive research into labor market information and credential programs, and dialogue across secondary, postsecondary, and employer stakeholders.

The primary purposes and goals for the Model Programs of Study Guide are to:

1. **Provide guidance and exemplars** for local pathway programs to adopt or customize as they develop programs of study for approval as part of Perkins V or Illinois' College and Career Pathway Endorsements.
2. **Establish a framework** for state agencies to develop and implement program supports.
3. **Identify priority dual credit courses** that are foundational to the industry sector's program of study and well-situated for statewide scaling and articulation.
4. **Define the competencies** that should be sequenced across a program of study course sequence to prepare students for the future of work in that industry area.
5. **Identify entry points** for employers to support coursework and work-based learning experiences.

The Model Programs of Study Guides supplement and complement other State of Illinois Career and Technical Education and career pathway resources, including the "ISBE Career Guide," State of Illinois Career Pathways Dictionary, Career Development Experience Toolkit, "Recommended Technical and Essential Employability Competencies," State of Illinois Workforce Development Strategic Plan, and related state and regional data resources. School districts, community colleges, and their partners are encouraged to use this guide, state resources, and local program and course information to develop materials for student and family outreach.

The Model Programs of Study Guide in Architecture, Construction, and Energy can be used as a reference in local planning processes. The guide presents and describes in detail each component of the sequence, including descriptions of the underlying research, analysis, and Advisory Committee input. In addition to the complete guide, a pathway map depicting the diagrams of the secondary and postsecondary sequences, as well as a table of the selected occupations, wages, and job growth, is available at the end of this document or at edsystemsniu.org/guides.

II. Development of the Model Programs of Study

Programs of study are a coordinated, non-duplicative sequence of academic and technical content at the secondary and postsecondary levels that culminate in a recognized postsecondary credential. The State of Illinois Model Programs of Study Guides are aligned with broader state policy goals to promote college and career readiness, including the state's Perkins V and ESSA plans (in particular, the College and Career Readiness Indicator), the Postsecondary and Workforce Readiness Act, the Dual Credit Quality Act, and the Illinois Career Pathways Dictionary.

Process for Development

Each model program of study was developed using a data-driven, backward-mapping approach that extended from the areas of job growth down through to the high school course sequence. The specific steps in this analysis included:

1. **Identifying high-priority occupations** in the industry sector that are high-skill, high-wage, and in-demand based on federal Department of Labor data for Illinois.
2. **Identifying promising postsecondary credentials** (degrees or certificates) that are broadly accessible to and through the Illinois community college system, and lead to high-priority occupations.
3. **Mapping the stackable degrees and certificates** that progress to promising credentials.
4. **Identifying strategic community college courses** that appear broadly among promising credentials, provide a solid foundation of knowledge essential to that industry sector, and are feasible for dual credit delivery.
5. **Mapping a course sequence from secondary through the first year of postsecondary** that incorporates strategic early college credit (including at least six early college credits in the career-focused course sequence) and is applicable to both Illinois secondary and postsecondary Perkins V requirements.
6. **Defining related technical competencies** for the foundational program of study courses that can be utilized to guide course development and postsecondary articulation.

Using data from the Department of Labor, Illinois Department of Employment Security, and MIT's Living Wage Calculator for the State of Illinois as a reference, the project team identified "high-priority occupations" as jobs with a positive growth outlook over the next 10 years, of high relative volume within that industry sector, and with median salaries that could sustain various family sizes within Illinois.[1] As of May 2025, occupations with median salaries higher than the living wage for 1 adult + 1 child ($40.41/hour) are considered as having a "high" living wage potential. Occupations with median salaries only higher than the living wage of 1 adult, no children ($23.56/hour) are considered as having a "medium"

[1] U.S. Department of Labor, Employment and Training Administration (n.d.). "Explore Careers." CareerOneStop. Retrieved March 2025, from careeronestop.org/explorecareers. Illinois Department of Employment Security, "Long-Term Occupational Projections 2020-2030" and "Wage Information: Occupational Employment and Wage Statistics (OEWS) Statewide." Retrieved March 2025, from ides.illinois.gov. Amy K. Glasmeier, "Living Wage Calculator," Massachusetts Institute of Technology, 2025. Retrieved March 2025, from livingwage.mit.edu.

living wage potential, and occupations with median salaries below the living wage of 1 adult, no children (less than $23.56/hour) are considered as having a "low" living wage potential.

The team identified as a "promising credential" any degree or certification that immediately prepares an individual for entry into or is a stackable for the identified high-priority occupations, then analyzed community college programs leading to these credentials from a sampling of six to ten colleges from across Illinois, representing a mix of urban, suburban, and rural institutions.[2] EdSystems analyzed and categorized all the career-focused and general education courses across the full sampling of the promising credential programs to determine which of these courses:

- are broadly common across multiple college programs in the sample,
- are likely accessible for dual credit opportunities considering student prerequisites and teacher credentialing requirements, and
- are generally transferable through Illinois Articulation Initiative or various articulation agreements.

This analysis and categorization process led to a recommended set of strategic career-focused and general education courses that provide a critical foundation for the program of study sequence.

Following this internal analysis, EdSystems and ICCB convened a stakeholder Advisory Committee of secondary, postsecondary, and private sector representatives to vet the recommendations and provide expertise and guidance on the development of the model programs of study (see appendix C). Over multiple webinars and feedback sessions across four months, the Advisory Committee and smaller working groups provided information about industry trends that may not be reflected in the Department of Labor or IDES data, credentials and degrees that are emerging as most promising in the field, on-the-ground implementation considerations for secondary and postsecondary programs, and future of work implications for the sector. The Advisory Committee further informed important decision-points including adjusting the course map and promising credential endpoints, selecting strategic early college credit courses, and identifying key competencies for target courses lacking broad statewide articulation. The culmination of EdSystems' analysis and the input of the Advisory Committee is reflected in this guide.

[2] For the analysis of this guide, EdSystems surveyed City Colleges of Chicago, College of DuPage, Elgin Community College, Illinois Central College, Illinois Eastern Community Colleges, Kankakee Community College, Lake Land College, and Rock Valley College.

III. Priority Occupations and Promising Credentials

Occupations in architecture, construction, and energy encompass an ever-growing array of well-paying career opportunities across Illinois. In the Chicago area, the Chicagoland Workforce Funders Alliance estimates there are more than 100,000 construction trades workers in the region, with 11,000 new hires expected annually through 2026.[3] Illinois is a leading state for jobs in the energy industry, with the state ranked 13th in the nation for the total number of solar jobs.[4] As both the State of Illinois and federal government consider infrastructure investments, including projects to mitigate climate change, the continued availability of a qualified workforce will serve as an anchor for Illinois' economic growth.

Promising Credential Program Categories

The project team's analysis of occupations and related postsecondary credentials in the architecture, construction, and energy sectors led to an identification of four credential program categories or pathways and additional subcategories:

1. **Trades and technicians** pathways and credentials leading to hands-on, skilled positions relating to the installation and repair of various building and energy system projects. Subcategories include:
    a. **Construction trades**, involving a variety of occupations in the building trades such as carpenters, construction laborers, plumbers, and electricians.
    b. **Energy technicians**, involving the installation and repair of renewable energy systems, such as wind and solar energy, and electric vehicle charging systems.
    c. **Automotive technicians and specialists**, involving the installation, repair and maintenance of various automotive systems, including diesel, hybrid and electric vehicles.
2. **Heating, ventilation, air condition, and refrigeration (HVACR) and maintenance** credentials for skilled labor positions as HVACR technicians or as installers of weatherization and energy efficiency improvements for residential and commercial buildings.
3. **Architecture and drafting** credentials that either prepare individuals for entry-level computer aided drafting and design (CAD), or that prepare students to transfer into bachelor' degree programs in architecture and similar fields.
4. **Construction management** credentials preparing students to actively manage complex construction and energy installation projects.

Although not depicted in the diagram, engineering credentials are also critical for these occupational areas, which prepare students for a range of careers to analyze, design, evaluate, and continuously improve complex manufacturing and industrial systems. Pathways to Engineering credentials are detailed in the State of Illinois Models Programs of Study Guide in Manufacturing and Engineering.

[3] Origami Works Foundation and Embarc Chicago (2021, January). "Construction Trades Guidebook." Chicagoland CareerPathways. careerpathways.net/wordpress/wp-content/uploads/2021/01/Construction-Trades-Guidebook.pdf

[4] Interstate Renewable Energy Council (n.d.). "Illinois: Solar and Clean Energy Jobs." Retrieved February 2024, from irecusa.org/illinois-solar-and-clean-energy-jobs/

Illinois Department of Employment Security, "Long-Term Occupational Projections 2020-2030" and "Wage Information: Occupational Employment and Wage Statistics (OEWS) Statewide." Retrieved December 2023, from ides.illinois.gov.

Diagram: **Postsecondary Opportunities**

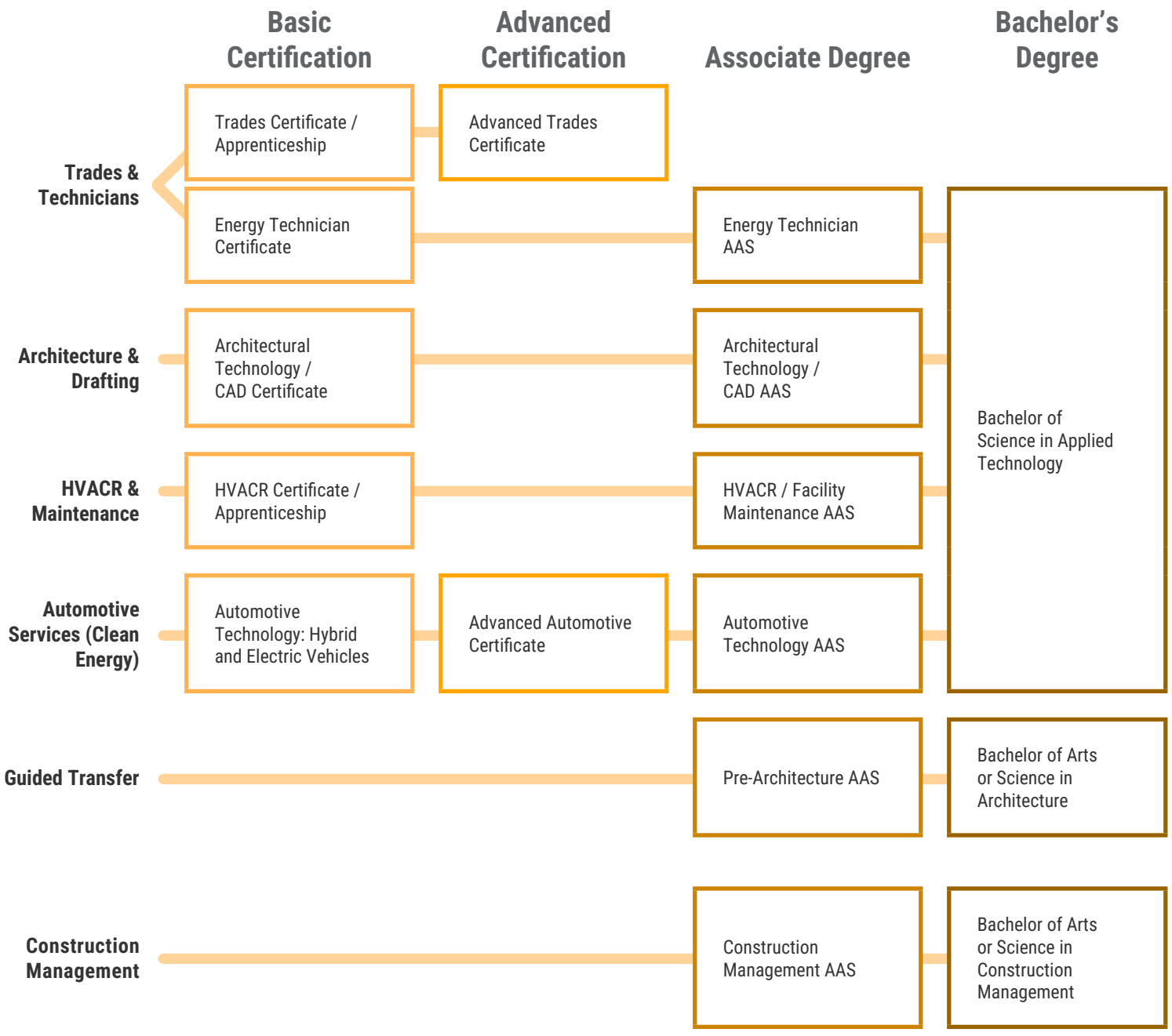

Table: **Selected Occupations, Wages, and Job Growth**

Program	Typical Job(s)	Living Wage Potential*	Median Hourly Wage**	IL Growth: Change over 10 years ***	IL Annual Job Openings***	Typical Educational Requirements
Trades & Technicians	Carpenters	Medium	$33.38	1%	2,490	High School Diploma
	Construction & Building Inspectors	Medium	$35.62	-2%	370	
	Construction Laborers	Medium	$29.94	5%	3,240	
	Electrical Power-Line Installers & Repairers	High	$52.80	9%	398	
	Electrical Engineering Technicians	Medium	$34.17	0.33%	265	Associate Degree
	Electricians	High	$46.42	7%	2,073	
	Energy Auditors	Medium	$35.09	-2%	370	
	Plumbers, Pipefitters, & Steamfitters	High	$45.43	2%	1,369	High School Diploma
	Roofers	Medium	$30.97	2%	520	
	Solar Energy Installation Managers	High	$46.58	4%	1,330	
	Solar Sales Representative & Assessors	High	$56.73	4%	500	Bachelor's Degree
	Solar Thermal Installers & Technicians	High	$45.43	3%	1,370	High School Diploma
	Wind Energy Operations Managers	High	$63.50	0%	3,100	Bachelor's Degree
Architecture & Drafting	Architects	High	$40.69	4%	370	Bachelor's Degree
	Architectural & Civil Drafters	Medium	$28.68	0%	291	
HVACR & Maintenance	Heating, Air Conditioning, and Refrigeration Mechanics & Installers	Medium	$28.93	9.5%	967	Postsecondary Certificate + Some College
	First-Line Supervisors of Mechanics, Installers, & Repairers	Medium	$37.67	9.6%	1,434	High School Diploma + Some College
Automotive Services (Clean Energy)	Automotive Service Technicians & Mechanics	Low	$24.05	2%	2,950	Postsecondary Certificate + Some College
	Bus & Truck Mechanics	Medium	$31.00	2%	759	High School Diploma
	Mechanical Engineering Technologists & Technicians	Medium	$33.12	1%	138	Associate Degree
Construction Management	Construction Managers	High	$52.66	4%	1,698	Bachelor's Degree
	Cost Estimators	Medium	$38.68	-2%	489	
	First-Line Supervisors of Construction Trades	High	$47.29	4%	1,326	High School Diploma

* Living wage potential is based on MIT's Living Calculator (livingwage.mit.edu) for Illinois in 2025. Occupations with median salaries higher than the living wage for 1 adult + 1 child ($40.41/hour) are considered as having a "high" living wage potential. Occupations with median salaries only higher than the living wage of 1 adult, no children ($23.56/hour) are considered as having a "medium" living wage potential, and occupations with median salaries below the living wage of 1 adult, no children (less than $23.56/hour) are considered as having a "low" living wage potential.

** Illinois Department of Employment Security. "Wage Information: Occupational Employment and Wage Statistics (Statewide)." Retrieved March 2025, from ides.illinois.gov/resources/labor-market-information/oews.html

*** Illinois Department of Employment Security. "Employment Projections (Long-Term Occupational Projections 2020-2030)." Retrieved March 2025, from ides.illinois.gov/resources/labor-market-information/employment-projections.html

High-Priority Occupations

The high-priority occupations associated with each of the promising credential program areas are identified in the table entitled Select Occupations, Wages, and Job Growth. A wide range of occupations in the construction trades, HVACR, automotive services, and architecture meet the job growth and living wage threshold described in this guide. This table also demonstrates the substantial job growth projected for construction management occupations, in contrast to substantially fewer openings in architecture, CAD, and surveying occupations.

Illinois is undergoing a significant transformation in its clean energy and construction sectors, driven by the state's clean energy goals and commitments outlined in the Climate and Equitable Jobs Act (CEJA). As a result, the demand for skilled workers in clean energy and sustainable construction is rapidly increasing. The "Illinois Clean Energy Jobs and Training Program Inventory" provides a critical analysis of workforce needs across clean energy industries and outlines the most in-demand entry-level occupations that intersect with the broader architecture, construction, and energy sector.[5]

The clean energy transition is both creating new job titles and transforming existing ones. The positions selected for this guide require a blend of traditional construction competencies such as electrical systems, safety protocols, and mechanical skills with emerging knowledge in sustainable materials, energy systems, and digital monitoring technologies. The occupations reflect Illinois' clean energy goals and offer a critical pathway to economic mobility. Many clean energy and construction-related roles pay above the regional living wage especially for workers who hold industry-recognized credentials or apprenticeships.

Levels of Education Needed

The levels of education needed for the various pathways in this guide vary greatly. More than half of the workforce's carpenters, plumbers pipefitters, and laborers have no postsecondary education, making this pathway highly accessible for students receiving industry credentials and training in high school. Entry-level positions for electricians and energy technicians, HVACR, automotive technicians, and maintenance are accessible after high school graduation or upon completion of a short-term postsecondary credential. A key consideration for individuals seeking to enter the construction trades after high school is whether to enter directly into entry-level non-union employment, seek a union apprenticeship, or pursue postsecondary education at a community college. While individuals can enter directly into entry-level, low- wage positions directly after high school, an apprenticeship or further education is generally required for higher-skill and higher-paying occupations. (Additional considerations for advising students on union vs. non-union pathways are detailed later in this guide.) In the construction trades, progression into supervisory roles is typically through on-the-job training and related industry credentials, rather than through attainment of an associate or bachelor's degree.

Careers in automotive typically need at least a high school diploma or equivalent to enter the field, though most employers prefer candidates who have completed a postsecondary certificate or diploma program in automotive technology, which usually takes six months to a year. An associate degree in automotive technology, typically earned at a community college over two years, is highly recommended for those seeking more advanced roles or specialization, particularly in areas like diagnostics and electric vehicle systems. Many technicians also complete manufacturer-specific training programs or industry-recognized credentials, such as those offered by Automotive Service Excellence (ASE).

Careers in architectural technology or CAD typically require at least a long-term certification (e.g., 40 or more credits) or an Associate of Applied Sciences (AAS) degree. As completion of the AAS better

[5] Illinois Department of Commerce and Economic Opportunity. "Illinois Clean Energy Jobs and Training Program Inventory," 2023. Retrieved December 2024, from dceo.illinois.gov/cleanenergy/programinventory.html

positions workers to enroll in a Bachelor of Science degree program at a later stage in their careers, the guide recommends an AAS in the architecture and drafting pathway.

Several Illinois universities offer a Bachelor of Science in Applied Technology, to which AAS degrees articulate.[6] Whenever possible, community colleges should ensure that AAS degrees articulate to bachelor's degree programs at Illinois public universities, recognizing that students may need targeted instructional supports to complete the math sequence requirements typical of bachelor's degrees.

Architects must be licensed by the Illinois Department of Financial and Professional Regulation, which requires completion of a professional architecture degree program approved by the National Architectural Accrediting Board (NAAB). Typically, students must complete a pre-professional bachelor's degree program in architecture, and then a NAAB-accredited Master of Architecture program requiring an additional 2–3 years of study. The model program of study incorporates a pre-architecture AAS program, which several Illinois community colleges offer to articulate into baccalaureate architecture programs within the Illinois university system. Pre-architecture AAS programs ensure students meet the requirements for junior year studio placement; a key milestone necessary for a student to complete the program in two additional years.

Occupations in construction management typically require a bachelor's degree. The Advisory Committee noted that individuals with an AAS can enter certain roles, but would need extensive on-the-job training and, most likely, additional education for continued advancement into higher-paying roles.

Advisory Committee Considerations

The Advisory Committee emphasized the need for students to leave high school with a fundamental set of both business and construction skills foundational to all pathways. The committee noted the growing role of technology in all areas of construction and design, and that current technologies must be integrated into all stages of the pathway model. Committee members also emphasized the need for students to have a strong understanding of reading schematics (including traditional blueprints and electronic versions), suggesting that the skillset should be embedded across pathways courses, instead of through a single course on blueprint reading. In the construction trades, the committee recommended informing students of the differences between union and non-union pathways, and the requirements and expectations for union apprenticeships. Finally, the Advisory Committee recommended that pathways expose students to occupations in construction and energy management, as areas that provide significant job opportunities but are not often presented to high school students.

Clean Energy Working Group

In 2024–2025, a Clean Energy Working Group for the State of Illinois Model Programs of Study Guides convened to review labor market information and career pathways for a broad range of clean energy jobs, drawing from the "Illinois Clean Energy Jobs and Training Program Inventory." For this guide, the group designed a dedicated automotive services pathway with a focus on careers related to electric vehicles to better align with emerging industry demand. As part of this effort, the added automotive service pathway includes dual credit course sequences that prepare students for evolving roles in electric vehicle installation, repair, and maintenance. The group also identified additional high-growth, clean energy-focused occupations across sectors such as solar, energy efficiency, and electric vehicle infrastructure, as shown in the Selected Occupations, Wages, and Job Growth table.

[6] Examples include Northern Illinois University's Bachelor of Science in Technology, Southern Illinois University's Bachelor of Science in Industrial Management and Applied Engineering, or Governors State University's Bachelor of Arts in Manufacturing Management.

Union vs. Non-Union Pathway Opportunities

School districts and colleges preparing students for the construction trades need to ensure that students leave high school with a strong understanding of both union and non-union pathways.

The following information is adapted from a September 2020 report prepared for the Chicagoland Workforce Funders Alliance, "Pathways in the Chicago-Area Building Trades," along with information provided by the Advisory Committee.[7]

- Estimates of the unionization rate of Illinois construction workers varies significantly by source, ranging from one-third to one-half of construction workers (with the remainder non-union).
- In the construction trades, hourly wages vary significantly for union and non-union positions. Non-union workers typically work for smaller contractors, on smaller projects.
    - The starting hourly wage for non-union positions are typically close to minimum wage, while union trade apprenticeships start at 50% of union journey worker wage ($17–25/hour in the Chicago area)
- Annual compensation levels will depend on the number of hours worked, and young people must factor in expected hours when determining compensation. Some non-union roles with lower hourly wages may be able to provide consistent work hours if the hiring company has a consistent workflow.
- Union apprenticeships involve from three to five years of near full-time paid work experience combined with extensive schooling during the first two years. While union apprenticeships require years of training, the unions are seeking individuals for their programs that can add value right away.
- The typical apprenticeship program requires apprentices to be age 18; have a high school diploma or GED; have a driver's license and access to a car (for transportation to both training locations and job sites); pass an aptitude test that typically involves questions on simple algebra, unit conversions, mechanical reasoning, and reading comprehension; pass a drug test; demonstrate physical fitness; and demonstrate motivation and relevant experience through an interview.
- Unions limit the number of applicants and can be highly competitive. Some have as many as 5,000 annual applicants for only a few hundred positions.
- Few trade apprentices begin immediately out of high school, with most beginning after age 21. However, it is unclear whether younger applicants are being filtered out, or whether younger people are not applying. High school pathway program coordinators should seek strong relationships with trade apprenticeship programs to increase opportunities for high school graduates to enter directly into trade apprenticeships after high school graduation. Entry-level positions with a non-union construction company can develop experience for individuals that intend to later apply to an apprenticeship, as can training through community college programs.
- The vast majority of construction trades training outside of union apprenticeships is for electricians, HVACR, and welding. Community college programs in the construction trades and HVACR either provide preparation for an apprenticeship program or non-unionized entry-level employment in the trades or with utilities.

[7] Lewis, J., & Paral, R. (2015, June 24). Pathways in the Chicago-Area Building Trades. Chicagoland Workforce Funder Alliance. chicagoworkforcefunders.org/wp-content/uploads/2021/01/Construction-Report-Jan-2021.pdf

IV. Programs of Study Sequence Description

The recommended programs of study sequences, which begin in high school, introduce students to a broad range of careers in the industry. The career-focused instruction includes Career and Technical Education (CTE) and early college coursework, coupled with work-based learning opportunities, to prepare students to demonstrate fundamental knowledge in their interest areas. The identified general education courses complement the career-focused instruction and align to typical postsecondary degree programs. Together, these comprehensive learning pathways prepare students to pursue promising postsecondary degrees and credentials leading to high quality, living wage careers.

As school districts and their community college partners develop a program of study sequence, they should ensure that the high school coursework enables all students in the pathways to attain technical and employability competencies (see appendices A and B). Districts should engage students in career awareness and exploration in middle school if possible, to prepare students to select and start a career-focused pathway in 9th or 10th grade. An early start gives students more openings in their schedule to complete skill development and capstone options, obtain significant early college credits, earn valuable industry credentials, participate in a career development experience, and potentially acquire a College and Career Pathway Endorsement by high school graduation.

Diagram: **Career-Focused Instructional Sequence**

	GRADES 9–10 **Orientation**	GRADES 10–12 **Skill Development**	GRADE 12 **Capstone**	1ST YEAR* **Postsecondary**
Trades & Technicians	Computer Applications for Business *Choose 1:* • Introduction to Technology and Engineering (Industrial) • Intro to Engineering Design	Construction Trades I Intro CAD	*Choose 1–2:* • Construction Trades II • Electrical Trades I & II	*Choose 1:* • Apprenticeship Training • Certification Program
HVACR & Maintenance			*Choose 1:* • HVACR I & II • Beginning Welding	
Architecture & Drafting			Civil Engineering and Architecture	*Course Sequence*
Automotive Services		Intro to Automotive *Choose 1–2:* • Brake Systems • Engine Repair	Basic Electrical	
Construction Management		Intro to Business	*Choose 1:* • Intro to Management • Financial Accounting	
Work-Based Learning	Career Exploration (2)	*Choose 1:* Career Development Experience *or* Youth Apprenticeship		
	Team-Based Challenge (2)*; may be offered through Career and Technical Student Organizations*			

KEY: *Dual credit course* *College & Career Pathway Endorsement*

High School Career-Focused Instructional Sequence and Work-Based Learning

The model programs of study outlined in this guide include a sequence of career-focused instruction that includes strategic early college and coursework from the Illinois State Board of Education's CTE program matrices for Construction and Design and Engineering and Energy Systems. The sequence begins by introducing students to the broad range of careers in the industry and then narrowing into a set of community college courses that are common and strategic for the field. The progression is designed to position students for success in a breadth of community college programs, apprenticeships, and a broad range of careers in the field.

Orientation Coursework

The model programs of study for architecture, construction, and energy commence with two suggested courses: a course focused on foundational computer applications and technology, and an introductory course providing a broad orientation to the field.

The first course, focused on computer applications and technology, is the Illinois Articulation Initiative (IAI)-affiliated Computer Applications for Business. This course is designed for prospective business majors but applicable to all, aiming to train students in general software applications including word processing, spreadsheets, and internet access methods.

The second course provides a broad introduction to all architecture, construction, and energy pathways. Two options are provided: Introduction to Technology, Trades, and Engineering or Introduction to Engineering Design. While Introduction to Engineering Design is affiliated with an IAI course, it may be difficult for high schools to offer due to the teacher qualification and course content requirements; however, the course is aligned to Introduction to Technology and Engineering, a CTE course. The Introduction to Engineering Design course combines pathways orientation with an introduction to the design development process.

To begin preparing for the College and Career Pathway Endorsements, students should also participate in multiple virtual and in-person visits to employer sites to better understand authentic industry environments and engage with professionals in the field. Students should hear from a variety of guest speakers in an array of architecture, construction, and energy careers to better understand opportunities in the field. Through the orientation course, students should be prepared to document their own personalized career pathway that leads to a promising credential.

Skill Development Coursework

The skill development course recommendations include (i) Construction Trades I for all students, across all pathways; (ii) Introductory CAD, for students in all pathways other than construction management; and (iii) Introduction to Business, for students in the construction management pathway.

The Construction Trades I course (or two-semester course sequence) provides students a strong foundation in safety, the design and construction process, measuring and scaling, and other foundational concepts for promising credentials in the field. A strong foundation in construction practices, processes, and principles is critical for students planning for a career in any of the proposed pathways, even if the student ultimately pursues a role in the business- or design-oriented pathways. Schools should integrate this course with Geometry in Construction, a model where geometry curriculum is taught in the construction context, co-taught by a math and career and technical education teacher. Even if not taught as an integrated Geometry in Construction course, math competencies should be incorporated with reference to the Transition to Technical Math course competencies outlined in the Statewide Transitional Math Competencies and Policies.

The recommended Construction Trades I course competencies, detailed later in this guide, scaffold on

to the orientation-level courses to further emphasize awareness and understanding of career pathways in the field. It emphasizes application of safety, construction processes, and other basic concepts under close teacher direction, and should utilize authentic projects addressing realistic customer needs. Essential employability competencies should be reinforced, with a priority emphasis on communication, problem-solving, initiative and self-drive, reliability and accountability, and adaptability and flexibility. Classroom instruction should include a team-based challenge that provides hands-on experience with, at minimum, fundamental construction techniques for framing, drywalling, and finishing. These trade areas are more feasible for incorporation into a high school classroom, as opposed to areas such as masonry or machinery operation.

In addition, students should attain the Occupational Safety and Health Administration (OSHA) ten-hour course completion card, which can be earned online through the CareerSafe program. Some Illinois community colleges offer prior learning to students who enroll with this credential.

At the skill development level, students should enroll in either Introductory CAD or, for students in the construction management pathway, Introduction to Business. Introductory CAD provides an introduction to computer aided drafting and design and its role in various technical occupations. The course's recommended competencies, detailed later in the guide, include a progression from fundamental principles of hand drawing to the basics of 2D CAD operations, with a preliminary introduction to 3-D CAD (with students learning more advanced 3D CAD operations in a subsequent course). This course should also provide students with an understanding of how different drawings are used for different trades, with a basic overview of the construction drawing process.

For students in the construction management pathway, Introduction to Business is a recommended course that provides students with a foundational understanding of business and management principles applicable across multiple business-related postsecondary programs. While Intro to Business is recommended, students in the construction management pathway with sufficient schedule flexibility should also consider Introductory CAD as an additional elective.

Students in the automotive services pathway should begin with Introduction to Automotive to build foundational knowledge in vehicle systems, shop safety, and the use of tools and diagnostic equipment. After completing this course, students are encouraged to take one or both of the following skill-building courses: Brake Systems and Engine Repair.

- Brake Systems introduces students to the operation, maintenance, and repair of modern vehicle braking systems. Students will learn to inspect, diagnose, and service components such as disc and drum brakes, hydraulic systems, anti-lock braking systems, and electronic braking controls. The course emphasizes safety protocols, precision measurement, and the use of diagnostic tools, which are especially important as braking systems become more complex in hybrid and electric vehicles.
- Engine Repair focuses on the internal combustion engine and its key components. Students will gain hands-on experience in disassembly, inspection, and reassembly of engines, as well as identifying common engine issues such as oil leaks, compression problems, and overheating. The course covers cylinder head and valve train service, timing systems, gaskets and seals, and other engine components. With the rise of electric vehicles, understanding traditional engine systems remains important for servicing hybrid vehicles and for developing transferable mechanical skills relevant to electric vehicle powertrains.

Together, these courses provide students with critical technical competencies and problem-solving skills in both traditional automotive and emerging electric vehicle service roles.

To be on track to earn the College and Career Pathway Endorsements, regional high school and community college partners should ensure students have earn three to six early college credit hours

through the skill development courses. Additionally, students should continue progressing through the work-based learning continuum. Classroom instruction should be coupled with continued employer site visits, an opportunity for students to participate in a job shadow experience at an employer site, and clubs or challenges related to their program area. Team-based challenges should be completed either as activities embedded within course curriculum or through a student/extracurricular organization. Students should be encouraged to engage in student or professional architecture, construction, or energy organizations, including Career and Technical Student Organizations such as SkillsUSA Illinois or Technology Student Association of Illinois, to continue to build familiarity with the profession and pathways towards various career options.

Capstone Coursework

At the capstone level, students engage in advanced topics relating to their individualized postsecondary pathway direction. The recommendations for students with a trades and technician focus are to either complete Construction Trades II, or, for students interested in pursuing an electrician career, Electrical Trades I/II.

The Construction Trades II course (or two-semester course sequence) develops students' advanced construction skills, either for entry-level employment, to continue into an apprenticeship or postsecondary program, or as a foundation for other related programs such as energy technicians or HVACR. As detailed in the recommended course competencies later in this guide, students in this course should be supported to make an informed decision as to whether to pursue postsecondary training and employment in the trades and be prepared for local apprenticeship application processes and requirements. The course's other competencies scaffold upon those introduced in Construction Trades I to prepare students for either entry-level employment or further postsecondary education and training. The course competencies intentionally emphasize knowledge needed for energy technician roles, including an understanding of work at height expectations typical for solar and wind energy jobs, and introduce students to the relationship between building envelopes and systems to energy utilization and efficiency.[8]

For students in the automotive services pathway, the Basic Electrical course builds on foundational automotive knowledge and focuses on the principles of electricity as they apply to modern vehicles. Students will learn to interpret wiring diagrams, use multimeters, diagnose electrical faults, and service key systems such as lighting, charging, starting, and electronic controls. As today's vehicles, especially hybrids and electric vehicles, become increasingly reliant on complex electrical and electronic systems, Basic Electrical equips students with the critical diagnostic and troubleshooting skills needed for success in both traditional automotive roles and emerging EV-related careers. Completing this capstone course helps prepare students for industry certifications and postsecondary training in advanced automotive and electrical technologies.

In the construction management pathway, students should be offered Intro to Management because that course is broadly applicable to construction management and business sequences.

To be eligible for the College and Career Pathway Endorsements, all students should complete a career development experience of at least 60 hours in length and earn at least six or more early college credit hours, through a mix of both career-focused and general education coursework. As their schedules permit, students can participate in a for-credit cooperative class to obtain work experience in addition to the recommended career-focused courses. Additionally, students should continue participation in clubs, professional organizations, or challenges related to their pathway.

[8] One curricular resource for energy efficiency concepts is the energy code curriculum provided by the Smart Energy Design Assistance Center, available at smartenergy.illinois.edu/community-college-energy-code/.

Diagram: **General Education Instructional Sequence**

	GRADES 9–10 **Orientation**	GRADES 10–12 **Skill Development**	GRADE 12 **Capstone**	1ST YEAR* **Postsecondary**
Math *for Trades & Technicians, Auto, HVACR & Maintenance*	*Choose 1:* • **Algebra I** *(or higher)* • **Geometry** *(Geometry in Construction if available)*	**Geometry** *(Geometry in Construction if available)* **Algebra II** *(or higher)*	*Choose 1:* • **Technical Math** • **Transitional Math: STEM**	*Choose 1:* • **Technical Math*** • **College Algebra**
Math *for Architecture & Drafting, Construction Management*		**Algebra II** *(or higher)* **Pre-Calculus**	*Choose 1:* • **College Algebra** • **Calculus** • **Statistics**	*Choose 1:* • **College Algebra*** • **Trigonometry** • **Calculus***
English	*English sequence*	*English sequence*	*Choose 1:* • **Transitional English** • **English Composition**	*Choose 1:* • **English Composition*** • **Oral Communication**
Science	*Science sequence*	**Physics** *(or science sequence)*	**Survey of Renewable Energy** *(if available, or science sequence)*	*Science sequence*
Social Science	*Social science sequence*	*Social science sequence*	*Social science sequence*	*Social science sequence*

KEY: *AP or dual credit course* · *Dual credit course* · *College & Career Pathway Endorsement* · *Dual credit course with IAI* · *Postsecondary course with IAI*

** If credit was already earned through an early college course, take the next requirement in the sequence or, if none, additional AAS or major courses*

High School General Education Courses

There are several critical considerations for general education coursework before graduating high school. The courses mentioned here are frequent requirements for many postsecondary promising credentials in architecture, construction, and energy and enhance students' opportunities for postsecondary success in addition to the career-focused courses already delineated.

- In **science**, students should complete physics, if possible, as either Advanced Placement or dual credit. At the senior year, Survey of Renewable Energy was identified by the Advisory Committee as an emerging dual credit or dual enrollment course opportunity and is included. This course involves the exploration of environmental, social, and basic technological issues relating to renewable energy technologies.
- In **math**, students should complete the highest math course possible in a calculus-based course sequence to be prepared for the full range of career options in Architecture, Construction, and Energy. Districts should consider math courses that contextualize math application in career fields, such as Geometry in Construction for all students in 9th or 10th grade, and technical math courses emphasizing application for students planning to pursue a career in the trades or as technicians. Students that do not demonstrate readiness for an early college math course during their senior year of high school should enroll in a STEM transitional math course that guarantees placement into college algebra at the postsecondary level. Students pursuing postsecondary credentials relating to

the trades and technicians or automotive services pathways may instead consider Technical Math, a transitional math course, to guarantees placement into the required math for that credential at the partner community college.

- In **English**, students prepared for college-level coursework in their senior year should enroll in a dual credit English Composition course (if available) or Advanced Placement English Language and Composition. If students are not prepared for college-level coursework, students should enroll in a transitional English course that, upon successful completion, guarantees placement into the partner community college's English Composition course.

First-Year Postsecondary Courses

The recommended first-year postsecondary courses build upon the knowledge and skills recommended at the capstone level. As described in the Union vs. Non-Union Pathway Opportunities section of this guide, students pursuing careers in the construction trades should carefully consider whether to apply to a trades apprenticeship or enroll in a postsecondary certificate program.

As is recommended at the high school level, community colleges should pursue opportunities to integrate and align career-focused coursework and work-based learning opportunities.

In the general education course areas, students will take the required 100-level courses. If the 100-level courses have been accomplished through early college credit, students will take the next required course in the subject or, if none, additional courses in their major.

Competency-Based Education Considerations

In 2021–2022, ICCB engaged a group of community colleges to design a competency-based education (CBE) program in the high-demand sectors of industrial maintenance and welding. Through that process, colleges developed a set of competencies essential for students to succeed in postsecondary programs and persist in the welding and industrial maintenance fields. These competencies should be used as a resource for aligning courses and programs of study with postsecondary and workforce expectations (see appendix B).

V. Strategic Dual Credit Courses: Competency Descriptions

To support implementation of the model programs of study, a working group of the Advisory Committee identified key competencies for the identified early college courses that lack statewide articulation. In architecture, construction, and energy, these courses are Construction Trades I & II, and Introduction to Computer Aided Drafting (CAD).

Construction Trades I *Key Competencies*	
Career Awareness	Students can demonstrate awareness of the career pathways in architecture, construction, and energy in order to plan a personalized pathway leading to a promising credential. Students have engaged in career exploration activities that include guest speakers and virtual and in-person site visits with architecture and construction firms, renewable energy companies, and utilities.
Safety Mindset	Students can use their awareness of safety practices and PPE in order to demonstrate a safety mindset when navigating a construction environment. Students are prepared to attain an OSHA 10-hour course completion card.
Introduction to Tools	Students can use their understanding of simple hand and power tools in order to identify, correctly set-up, and operate them.
Material Handling	Students can use their knowledge of material types, standard sizes, and safe handling practices to identify and utilize materials needed for basic project types.
Measuring and Scaling	Students can use their understanding of measurement systems and scaling concepts to demonstrate proper use of measuring tools, as well as conversion between decimal and fraction units.
Design and Construction Process	Students can use their awareness of basic concepts in design and construction in order to describe the steps in a residential construction project, with an introduction to, at minimum, blueprints, floor plans, foundations, carpentry, plumbing, electrical, HVAC, and masonry systems.
Layout and Schematic Reading	Students can use their understanding of basic project layout and schematic concepts to differentiate among schematics needed for different trade areas (e.g., carpentry, electrical, plumbing) and apply their understanding in authentic situations.
Cost Estimation	Students can apply of basic cost estimation principles to estimate labor and material costs in an authentic situation.

Construction Trades II *Key Competencies*	
Career Decision Making	Students can use their understanding of the physical demands, education requirements, transportation needs, and earning potential of various construction career pathways in order to make an informed decision as to whether to pursue postsecondary training and employment in a particular pathway. Students are aware of and prepared for local apprenticeship application, interview, testing, and fitness demonstration processes and requirements.
Safety Compliance	Students can use their knowledge of safety principles and regulations in order to maintain a secure work environment, safely engage in construction processes, and comply with local, federal, and jobsite health and safety demands. Students are prepared to attain or renew CPR and First Aid certifications from an accrediting body.
Work at Height	Students can use their understanding of ladders, scaffolding, safety harnesses, and rigging to engage in safe work at height construction practices; students understand work at height expectations in various trade areas.
Cost Estimation	Students can use their knowledge of material and labor costs and technical math principles to accurately estimate both the material and labor costs of an authentic project.
Energy Utilization and Efficiency	Students can apply their understanding of building envelopes and mechanical, electrical, and plumbing (MEP) systems in an authentic assessment of impacts on a building's energy utilization and efficiency.
Construction Application	Students can use their knowledge of schematic reading and apply fundamental construction skills and techniques to, with minimal supervision, interpret the requirements of schematics and safely construct or install an authentic project. Ideally, students are allowed to choose an area of specialization such as carpentry, plumbing, electrical, or masonry.

Introduction to Computer Aided Drafting (CAD) *Key Competencies*	
Students can use their understanding of the construction drawing process and various trades to read and interpret authentic architectural and engineering drawings, including drawings from various trades areas.	
CAD Hardware	Students can use their knowledge of a CAD workstation to identify and use its hardware configurations.
Basic Drawing Functions	Students can use their knowledge of CAD software to construct and revise 2-D Drawings, including basic draw, editing, and layering.
View Selections:	Students can utilize their understanding of appropriate CAD drawing views to choose among orthographic, section, auxiliary, and pictorial where appropriate.
Notation	Students can produce appropriate drawing notes, symbols, and schedules.
Dimensioning and Tolerancing	Students can apply their understanding of basic dimensioning and tolerancing concepts in authentic scenarios.
2D and 3D Comparison	Students can demonstrate an understanding of how 2D and 3D CAD operations and software are each used in authentic scenarios and processes.
Reading and Interpretation	Students can use their understanding of the construction drawing process and various trades to read and interpret authentic architectural and engineering drawings, including drawings from various trades areas.

Appendices

A: Cross-Sector Essential Employability and Entrepreneurial Competencies

The following are from "Recommended Technical and Essential Employability Competencies for College and Career Pathway Endorsements," a document developed through an iterative process involving public-private steering committees established pursuant to the Postsecondary and Workforce Readiness Act in order to implement College and Career Pathway Endorsements.

Essential Employability Competencies	
Teamwork & Conflict Resolution	Students can use their understanding of working cooperatively with others to complete work assignments and achieve mutual goals.
Communication	**Verbal**: Students can use their understanding of English grammar and public speaking, listening, and responding, convey an idea, express information, and be understood by others. **Written**: Students can use their understanding of standard business English to ensure that written work is clear, direct, courteous, and grammatically correct. **Digital**: Students can use their understanding of email, keyboarding, word processing, and digital media to convey work that is clear, direct, courteous, and grammatically correct.
Problem Solving	Students can use their critical thinking skills to generate and evaluate solutions as they relate to the needs of the team, customer, and company.
Decision Making	Students can use their understanding of problem solving to implement and communicate solutions.
Critical Thinking	Students can use their understanding of logic and reasoning to analyze and address problems.
Adaptability & Flexibility	Students can use their understanding of workplace change and variety to be open to new ideas and handle ambiguity.
Initiative & Self-Drive	Students can use their understanding of goal setting and personal impact to achieve professional goals and understand personal impact.
Reliability & Accountability	Students can use their understanding of commitment, time management, and follow through to ensure that a professional team functions properly and meets collective goals.
Cultural Competence	Students can use their understanding of diversity and inclusion to communicate and work effectively across a multitude of abilities, cultures, and backgrounds.
Planning & Organizing	Students can use their understanding of time management to plan effectively and accomplish assigned tasks.

Entrepreneurial Competencies	
Principles of Entrepreneurship	Students can apply their understanding of the process and characteristics of business development and promotion in order to apply strategies of innovation to personal and professional business pursuits.
Innovation & Invention	Students can use their understanding of idea generation, design thinking, product and business development in order to introduce and process new and effective ideas.
Growth Mindset	Students can use their understanding of learning from challenges, set-backs, and failure in order to adapt strategies and continue efforts to achieve personal goals.

B: Postsecondary Competency-Based Education Competencies for Industrial Maintenance and Welding Programs

In alignment with Illinois' Career and Technical Education Plan (i.e., Perkins V) and the Higher Education Strategic Plan, the following competencies were released by Education Systems Center at Northern Illinois University in partnership with the Illinois Community College Board in 2023. The competencies support postsecondary, competency-based education programs in welding and industrial maintenance. Competency-based education focuses on determining a student's achievement by evaluating proficiency within a set of learning outcomes and objectives moving away from traditional time-based constraints.

Industrial Maintenance	
OSHA Standards	
Definition	I can perform my duties observing and utlizing OSHA standards.
Level of Mastery: **Developing**	• Audit a machine following guides to indicate what's safe; identify violations following the OSHA checklist; recognize and document safety violations. • Identify workplace hazards.
Level of Mastery: **Developed**	• Identify safety violations before they occur. Correct a safety violation by reporting and following proper procedure to remedy a situation. Respond appropriately to a safety hazard. • Identify ways to mitigate the workplace hazard.
Level of Mastery: **Highly Developed**	• Instruct another individual on how to do a safety audit. You can train someone else to make the area safe. • Develop a safety program that recognizes and mitigates workplace hazards.
Example Assessment: **Formative**	• Multiple choice • Online modules with quizzes, including interactive components and discussion boards • Case study with a scenario and pictures • Simulation/role play to note all of the violations • Creating a checklist • Complete an OSHA checklist
Example Assessment: **Summative**	• Get OSHA 10 card certification • Quizzes/exams • Case studies • Final safety project

Industrial Maintenance	
Repair Equipment	
Definition	I can perform equipment repairs utilizing various processes and systems.
Level of Mastery: **Developing**	Identify what tools, practices and procedures that must be followed to perform a required repair.
Level of Mastery: **Developed**	Utilize the tools and procedures to perform the repair.
Level of Mastery: **Highly Developed**	Can instruct others on the proper tool usage and procedures to perform a required repair task.
Example Assessment: **Formative**	• Template/checklist (work order) • Tag tools with tool name and application cards
Example Assessment: **Summative**	• Observation/demonstration • Video submission of demonstration
Industrial Wiring	
Definition	I can demonstrate wiring techniques to meet industry standards in order to acutuate motors and other devices.
Level of Mastery: **Developing**	Wire a motor control circuit using an existing diagram with minimal supervision.
Level of Mastery: **Developed**	Wire a functional motor control circuit, from a reference diagram, meeting industry standards with no assistance.
Level of Mastery: **Highly Developed**	Develop a wiring schematic based upon a set of parameters and wire a functional motor control circuit that meets industry standard with no assistance.
Example Assessment: **Formative**	• Sketches • Digital designs • Online modules with interactive components • Exam/quiz
Example Assessment: **Summative**	• Observation/demonstration • Video submission of demonstration

Industrial Maintenance	
Use of Tools	
Definition	• I can properly use the correct basic tools commonly used in the industry. • I can properly use the correct specialized/domain-specific tools commonly used in the industry.
Level of Mastery: **Developing**	• Identify tools for their application and intended use; state common industry nomenclature for tools. • Recognize tools for their application and intended use; identify the tool and it's purpose; demonstrate understanding of common industry nomenclature.
Level of Mastery: **Developed**	• Identify and select an appropriate tool from a toolbox then use it correctly to correct a given scenario, maintaining a proper work environment. Store the tool properly when work is complete. • Identify and select an appropriate tool from a toolbox then use it correctly to correct a given scenario, maintaining a proper work environment; store the tool properly when work is complete.
Level of Mastery: **Highly Developed**	• Instruct a colleague on the proper application of a tool or identify applications for a tool beyond common use. Identify when a tool is used improperly and coach a colleague on its correct application. • Demonstrate tool usage to a classmate or colleague; use a tool to solve a problem outside its designation; identify when a classmate/colleague is not using a tool properly and coach them on the proper usage.
Example Assessment: **Formative**	Basic tools: • Online modules with interactive components • Scenario with pictures • Exams/quizzes Specialized/domain-specific tools: • Multiple choice • Online modules with interactive components • Scenario with pictures • Exams/quizzes
Example Assessment: **Summative**	• Observation/demonstration • Video submission of demonstration

Industrial Maintenance	
Career Planning	
Definition	I can explain the various industries in my local area; locate potential career opportunities; build a cover letter, resume, follow up letter; demonstrate basic interviewing skills.
Level of Mastery: **Developing**	Struggles to identify potential career opportunities; resume, cover letter, and follow up letter has grammatical errors; unable to demonstrate good interviewing techniques.
Level of Mastery: **Developed**	Able to identify potential career opportunities; able to build a resume, cover letter and follow up letter; able to demonstrate basic interviewing techniques.
Level of Mastery: **Highly Developed**	Able to identify multiple career field career opportunities; resume, cover letter, and follow up letter are well written; outstanding interviewing skills and answers questions fully and articulately.
Example Assessment: **Formative**	• Observation • Exam/quiz
Example Assessment: **Summative**	• Cumulative observation • Performance project • Quiz/exam • Case study
Operation of Systems	
Definition	I can operate automated systems by programming devices controls through problem solving and analyzing the processes and task.
Level of Mastery: **Developing**	Program and troubleshoot using controllers to find potential failures.
Level of Mastery: **Developed**	Design, program and troubleshoot using controllers to find the most likely cause with no assistance.
Level of Mastery: **Highly Developed**	Demonstrate to others how to design, program and troubleshoot using controllers to find potential failures and choose the most likely cause with no assistance.
Example Assessment: **Formative**	• Lab activity with rubric • Build a simulator • Case study questions • Exams/quizzes
Example Assessment: **Summative**	• Observation/class demonstration • Lab activity using a rubric • Build and troubleshoot a project • Case study questions

Industrial Maintenance	
Mechanical Systems	
Definition	I can operate, install, mechanical systems by analyzing for proper operation.
Level of Mastery: **Developing**	Recognize when a system is not functioning as it was intended.
Level of Mastery: **Developed**	Solve a given problem based on the description of the problem; give possible solitions to fix the issue.
Level of Mastery: **Highly Developed**	Teach someone what to look for in the problem statement and help them identify the problem item/items.
Example Assessment: **Formative**	• Various exams in review of content must pass with 80% before moving on to the next module • Lab activity with rubric
Example Assessment: **Summative**	• Passing thier C-210 SACA certification • Exams/quizzes
Fluid Power Systems	
Definition	I can operate fluid powers systems by troubleshooting and analyzing for proper operation.
Level of Mastery: **Developing**	Define and recognize symbols for the Hydraulic and Pnuematics.
Level of Mastery: **Developed**	Identify the flow of the schematic drawings.
Level of Mastery: **Highly Developed**	Demonstrate how to identify and follow flow through system.
Assessment: **Formative**	• Various exams in review of content must pass with 80% before moving on to next module • Lab activity with rubric
Assessment: **Summative**	• Passing their C-209 SACA Pneumatic and/or C-255 SACA Hydraulic Certifications • Exams/quizzes

Industrial Maintenance	
Electronics Systems	
Definition	I can repair electronic systems through troubleshooting and testing of components.
Level of Mastery: **Developing**	Identify what tools and systems are used; troubleshoot and/or repair electronic systems following practices and procedures.
Level of Mastery: **Developed**	Use tools, systems, practices and procedures to troubleshoot and/or repair electronic systems.
Level of Mastery: **Highly Developed**	Teach others how to repair electonics systems with the proper tools, practices and proceedures.
Example Assessment: **Formative**	• Multiple choice • Online modules with interactive components • Scenario with pictures • Exams/quizzes
Example Assessment: **Summative**	• Observation/demonstration • Video submission of demonstration
System Faults	
Definition	I can troubleshoot and diagnose common system faults for industrial machinery.
Level of Mastery: **Developing**	Identify potential failures and choose the most likely cause.
Level of Mastery: **Developed**	Identify the single cause of failure using testing procedures and replace the component as needed.
Level of Mastery: **Highly Developed**	Identify the single cause of failure using testing procedures and meters and replace the component as needed within the allotted time expected by industry.
Example Assessment: **Formative**	• Lab activity with a rubric • Troubleshoot with simulator • Case study questions
Example Assessment: **Summative**	• Observation/class demonstration • Lab activity using a rubric • Troubleshoot a project • Case study questions

Industrial Maintenance	
Circuits and Components	
Definition	I can successfully construct electrical circuits and components.
Level of Mastery: **Developing**	Wire an electronic circuit using an existing electronic diagram with minimal supervision.
Level of Mastery: **Developed**	Wire a functional electronic circuit from a diagram that meets industry standard with no assistance.
Level of Mastery: **Highly Developed**	Develop an electronic diagram based upon a set of parameters and wire a functional circuit that meets industry standard with no assistance.
Example Assessment: **Formative**	• Lab activity with a rubric • Build with simulator
Example Assessment: **Summative**	• Observation/class demonstration • Lab activity using a rubric • Build a project
Self-Regulation	
Definition	I can demonstrate commitment, time management, and follow through.
Level of Mastery: **Developing**	Absent less than the maximum allowed days/hours; complete tasks when allotted more time than required.
Level of Mastery: **Developed**	Show up on time; prepare for task-at-hand prior to starting; solicit and receive feedback.
Level of Mastery: **Highly Developed**	Help others; well-prepared for tasks; arrive early and stay late; able to receive feedback and seeks feedback from others.
Example Assessment: **Formative**	• Online modules with interactive components • Scenario with pictures
Example Assessment: **Summative**	• Cumulative observation with tracking (attendance) • Checklist

Industrial Maintenance	
Communication	
Definition	I can communicate and manage a project to address customer needs.
Level of Mastery: **Developing**	Orally convey needs to others; transmits clear written communication using professional terms; all communications are respectful (free from derogatory or generalizing language).
Level of Mastery: **Developed**	Orally communicate with minimal distracting words; able to communicate in written word with minimal grammatical and spelling errors; able to utilize computer-based communication software.
Level of Mastery: **Highly Developed**	Orally communicate in an articulate manner with no distracting words; written communication has no spelling or grammatical errors; utilizes computer software with no issues.
Example Assessment: **Formative**	• Scenario with pictures • Written correspondence
Example Assessment: **Summative**	• Written "exam" (resume/cover letter) • Scenario application
Reasoning/Critical Thinking	
Definition	I can problem solve to create and evaluate solutions.
Level of Mastery: **Developing**	Unable to recognize a problem; bring the problem to a supervisor's attention.
Level of Mastery: **Developed**	Recognize a problem exists; identify the root cause; independently gather information to refine understanding of the problem; proactively seek solutions; execute solution.
Level of Mastery: **Highly Developed**	Implement solutions; recognize problems as break-through for future advancement.
Example Assessment: **Formative**	• Online modules with interactive components • Scenario with pictures
Example Assessment: **Summative**	• Observation/demonstration • Scenario application

Welding	
Shop Safety	
Definition	I can demonstrate proper shop safety by identifying potential hazards and following shop procedures utilizing industry standards.
Level of Mastery: **Developing**	Identify and correct safety violations after an incident happens.
Level of Mastery: **Developed**	Identify and correct safety violations before an incident happens.
Level of Mastery: **Highly Developed**	Identify co-workers that are demonstrating risky behavior and can provide targeted intervention to help bring their skills up to speed.
Example Assessment: **Formative**	• Written test • Direct observation
Example Assessment: **Summative**	• Performance project • Case study
Welding Fundamentals	
Definition	I can identify and explain the similarities and differences between welding processes, cutting processes, welding polarities, welding positions, welding joint designs, and welding joint preparation.
Level of Mastery: **Developing**	Explanations of the differences between welding polarities, processes, joint types and designs have major inconsistencies or include inaccurate information.
Level of Mastery: **Developed**	Able to explain differences between welding polarities, processes, joint types and designs with minor inconsistencies.
Level of Mastery: **Highly Developed**	Able to explain differences and similarities between welding polarities, welding processes, welding joint types, and welding preparations with detail.
Example Assessment: **Formative**	• Written test • Direct observation
Example Assessment: **Summative**	• Performance project • Case study

Welding	
Metallurgy	
Definition	I can identify differences between ferrous and non-ferrous metals, recognize the difference between hot rolled (HR) and cold rolled (CR) materials, describe production of iron, steel, and cast irons and their classifications, and explain the differences between heat-treatment processes commonly used in welding.
Level of Mastery: **Developing**	Inconsistant with identifying materials; unable to explain differences between HR and CR steels; unable to explain heat treatment.
Level of Mastery: **Developed**	Able to recognize ferrous and non ferrous materials, able to explain production of materials, and explain heat treatment processes.
Level of Mastery: **Highly Developed**	Able to explain differences between ferrous and non ferrous materials, visually identify HR and CR materials, able to demonstrate a variety of heat treatment processes, and able to accurately explain material production.
Example Assessment: **Formative**	• Written test • Direct observation
Example Assessment: **Summative**	• Performance project • Case study
Print Reading	
Definition	I can demonstrate a working knowledge of print reading; recognize the alphabet “of lines”; welding symbols and abbreviations; and demonstrate proper use of various measuring devices using imperial and metric formats.
Level of Mastery: **Developing**	Inconsistent in welding symbol identification; difficultly using basic measuring tools; struggles to recognize basic line types on a print.
Level of Mastery: **Developed**	Able to accurately read welding symbols; identify line types on working drawings; accurately measure using various tools; able to convert fractions to decimals.
Level of Mastery: **Highly Developed**	Able to make a set of mechanical drawings; write welding symbols; convert imperial dimensions to metric.
Example Assessment: **Formative**	• Written test • Direct observation
Example Assessment: **Summative**	• Performance project • Case study

Welding	
Material Preparation	
Definition	I can explain and perform material preparation for welding using various manual and mechanized cutting tools.
Level of Mastery: **Developing**	Inconsistent in set up of equipment; material preparation is not straight or has discontinuities in the prepared edge.
Level of Mastery: **Developed**	Able to prepare welding materials using Oxyfuel, plasma, and hand tools.
Level of Mastery: **Highly Developed**	Able to prepare welding materials with accuracy according to a set of plans using Oxyfuel, plasma, and hand tools.
Example Assessment: **Formative**	• Written test • Direct observation
Example Assessment: **Summative**	• Performance project • Case study
Oxyfuel Gas Welding	
Definition	I can weld using Oxyfuel gas welding to perform fillet and groove welds on basic welding joint types in the four welding positions according to American Welding Society (AWS) standards.
Level of Mastery: **Developing**	Complete welds according to AWS standards but have weld defects.
Level of Mastery: **Developed**	Complete welds according to AWS standards with discontinuities but no defects.
Level of Mastery: **Highly Developed**	Complete welds according to AWS standards with no discontinuities or defects.
Example Assessment: **Formative**	• Written test • Direct observation
Example Assessment: **Summative**	• Performance project • Case study

Welding	
Shielded Metal Arc Welding	
Definition	I can weld using shielded metal arc welding to perform fillet and groove welds on basic welding joint types in the four welding positions according to American Welding Society (AWS) standards and can complete a guided bend test.
Level of Mastery: **Developing**	Complete welds according to AWS standards but have weld defects.
Level of Mastery: **Developed**	Complete welds according to AWS standards with discontinuities but no defects.
Level of Mastery: **Highly Developed**	Complete welds according to AWS standards with no discontinuities or defects.
Example Assessment: **Formative**	• Written test • Direct observation
Example Assessment: **Summative**	• Performance project • Case study
Gas Metal Arc Welding	
Definition	I can weld using gas metal arc welding to perform fillet and groove welds on basic welding joint types in the four welding positions according to American Welding Society (AWS) standards and can complete a guided bend test.
Level of Mastery: **Developing**	Complete welds according to AWS standards but have weld defects.
Level of Mastery: **Developed**	Complete welds according to AWS standards with discontinuities but no defects.
Level of Mastery: **Highly Developed**	Complete welds according to AWS standards with no discontinuities or defects.
Example Assessment: **Formative**	• Written test • Direct observation
Example Assessment: **Summative**	• Performance project • Case study

Welding	
Gas Tungsten Arc Welding	
Definition	I can weld using gas tungsten arc welding to perform fillet and groove welds on basic welding joint types in the four welding positions according to American Welding Society (AWS) standards and can complete a guided bend test.
Level of Mastery: **Developing**	Complete welds according to AWS standards but have weld defects.
Level of Mastery: **Developed**	Complete welds according to AWS standards with discontinuities but no defects.
Level of Mastery: **Highly Developed**	Complete welds according to AWS standards with no discontinuities or defects.
Example Assessment: **Formative**	• Written test • Direct observation
Example Assessment: **Summative**	• Performance project • Case study
Flux Core Arc Welding	
Definition	I can weld using flux cored arc welding to perform fillet and groove welds on basic welding joint types in the four welding positions according to American Welding Society (AWS) standards and can complete a guided bend test.
Level of Mastery: **Developing**	Complete welds according to AWS standards but have weld defects.
Level of Mastery: **Developed**	Complete welds according to AWS standards with discontinuities but no defects.
Level of Mastery: **Highly Developed**	Complete welds according to AWS standards with no discontinuities or defects.
Example Assessment: **Formative**	• Written test • Direct observation
Example Assessment: **Summative**	• Performance project • Case study

Welding	
Pipe Welding	
Definition	I can demonstrate welding using various welding processes on pipe in the 1G/1F, 2G/2F, 5G/5F, and 6G/6F positions according to American Welding Society (AWS) standards and can complete a guided bend test.
Level of Mastery: **Developing**	Complete welds according to AWS standards but have weld defects.
Level of Mastery: **Developed**	Complete welds according to AWS standards with discontinuities but no defects.
Level of Mastery: **Highly Developed**	Complete welds according to AWS standards with no discontinuities or defects.
Example Assessment: **Formative**	• Written test • Direct observation
Example Assessment: **Summative**	• Performance project • Case study
Non-Ferrous Welding	
Definition	I can demonstrate welding using various welding processes to perform fillet and groove welds on basic welding joint types in the four welding positions according to American Welding Society (AWS) standards.
Level of Mastery: **Developing**	Complete welds according to AWS standards but have weld defects.
Level of Mastery: **Developed**	Complete welds according to AWS standards with discontinuities but no defects.
Level of Mastery: **Highly Developed**	Complete welds according to AWS standards with no discontinuities or defects.
Example Assessment: **Formative**	• Written test • Direct observation
Example Assessment: **Summative**	• Performance project • Case study

Welding	
Fabrication	
Definition	I can discuss a project with a "client", develop a plan to solve the problem, design a set of drawings, develop a budget, order materials, and fabricate the project.
Level of Mastery: **Developing**	Struggles to communicate with "client"; drawings are incomplete; budget is inaccurate; materials are ordered improperly; fabrication skills are minimal.
Level of Mastery: **Developed**	Able to work with "client" to determine problem, develop a work plan, develop a budget, order materials and fabricate project.
Level of Mastery: **Highly Developed**	Works with "client" with no issues, able to provide multiple solutions to the problem, and develops detailed work plan.
Example Assessment: **Formative**	Direct observation
Example Assessment: **Summative**	• Performance project • Case study
Weld Inspection	
Definition	I can use various weld examinations, destructive and non-destructive testing methods to locate and identify welding discontinuities and defects as identified by American Welding Society (AWS) welding codes.
Level of Mastery: **Developing**	Unable to identify weld discontinuities and defects; unable to explain destructive and non destructive testing methods.
Level of Mastery: **Developed**	Able to explain the differences between weld discontinuities and weld defects; able to explain the differences between destructive and non destructive testing methods.
Level of Mastery: **Highly Developed**	Able to identify and explain how to correct for weld discontinuities and defects; able to perform various types of destructive and non destructive testing methods.
Example Assessment: **Formative**	• Written test • Direct observation
Example Assessment: **Summative**	• Performance project • Case study

Welding	
Career Planning	
Definition	I can explain the various industries in my local area; locate potential career opportunities; build a cover letter, resume, follow up letter; demonstrate basic interviewing skills.
Level of Mastery: **Developing**	Struggles to identify potential career opportunities; resume, cover letter, and follow up letter has grammatical errors; unable to demonstrate good interviewing techniques.
Level of Mastery: **Developed**	Able to identify potential career opportunities; able to build a resume, cover letter and follow up letter; able to demonstrate basic interviewing techniques.
Level of Mastery: **Highly Developed**	Able to identify multiple career field career opportunities; resume, cover letter, and follow up letter are well written; outstanding interviewing skills and answers questions fully and articulately.
Example Assessment: **Formative**	• Written test • Direct observation
Example Assessment: **Summative**	• Performance project • Case study
Accountability	
Definition	I can demonstrate dependability, time management, and preparedness.
Level of Mastery: **Developing**	Demonstrates tardiness and absenteeism; lack of preparation.
Level of Mastery: **Developed**	Shows up on time; prepared for task at hand; receives feedback; solicits feedback.
Level of Mastery: **Highly Developed**	Helps others; well-prepared; arrives early and stays late; able to receive feedback and seeks feedback from others.
Example Assessment: **Formative**	• Direct observation • Group projects • Self-assessment
Example Assessment: **Summative**	Direct observation

Welding	
Communication	
Definition	I can effectively demonstrate oral, written, and digital competencies.
Level of Mastery: **Developing**	Struggles to communicate orally; uses distracting words; does not make eye contact; excessively fidgets while communicating; written communication contains excessive spelling and grammatical errors; unable to navigate computer software.
Level of Mastery: **Developed**	Able to orally communicate with minimal distracting words; able to communicate in written word with minimal grammatical and spelling errors; able to actively listen; able to effectively communicate using digital devices.
Level of Mastery: **Highly Developed**	Able to orally communicate in an articulate manner with no distracting words; written communication has no spelling or grammatical errors; actively listens; able to effectively communicate using digital devices.
Example Assessment: **Formative**	• Written test • Direct observation
Example Assessment: **Summative**	Performance project
Critical Thinking	
Definition	I can evaluate and analyze problems.
Level of Mastery: **Developing**	Unable to recognize a problem; bring the problem to a supervisor's attention.
Level of Mastery: **Developed**	Recognize a problem exists; identify the root cause; gather information to refine understanding of the problem (seek solutions); execute solution.
Level of Mastery: **Highly Developed**	Implement solutions; recognize problems as break-through for future advancement.
Example Assessment: **Formative**	• Oral questioning • Direct observation • Group project • Role play • Self-assessment
Example Assessment: **Summative**	• Performance project • Case study

C: 2021 Advisory Committee Membership

Craig Anz
Associate Professor
Southern Illinois University

Jeff Bott
CTE Division Head
Buffalo Grove High School

John Cabage
Associate Professor & Construction Management Coordinator
Eastern Illinois University

Kristie Conklin
Workforce Development Contractor
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Kimberly Erskine
Workforce Development Manager
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Executive Director of College & Career Readiness
Rockford Public Schools

Angela Gerberding
Associate Director for Integrated Career Programs
ICCB

Chris Gordon, PhD
Associate Dean, School of Engineering
Southern Illinois University Edwardsville

Michael Hartge
Senior Manager, Policy
Hire 360 Chicago

Sam Herr
CEO
Renewal by Andersen - Central IL

Eric Hill
Executive Director
SkillsUSA of Illinois

Randy Hines
Assistant Professor, CAD & Drafting
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Board Member
Illinois Design Educators Association

Sana Jafi
Executive Director
Chicago Learning Exchange

Nicole Joerger
Associate Director for CTE
ICCB

Luke Karner
Pathways Program Manger
Chicago Learning Exchange

Patrick Klette
Electrical Technology Program Coordinator
Kankakee Community College

Eric Lasky
Vice Principal
Ridgewood High School

Steven Lenz
Chair, Heating & Air Conditioning Engineering Technology
College of Lake County

Scott Loberg
VP Education Safety
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Dave Loomis
Director, Center for Renewable Energy
Illinois State University

Lucretzia Jamison
Dean, Dawson Technical Institute
City Colleges of Chicago Kennedy-King

Alicia Martin
President & CEO
Associated Builders & Contractors, Inc.

Chris Merrill
Executive Director
Illinois TSA

Uzma Noormohamed
Program Director
Illinois Science and Energy Innovation Foundation

David Osborne
Principal Consultant
Illinois State Board of Education

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Director, Energy Management and Retail
Brookfield Properties

Margi Schiemann
Director, Infrastructure Programs & Support
Nicor

Clint Taylor
District Council Business Manager
Illinois Laborers' & Contractors Joint Apprenticeship & Training Program

Whitney Thompson
Senior Director for CTE
Illinois Community College Board

D: 2025 Clean Energy Working Group Membership

Natasha Allen
Director for Career & Technical Education
Illinois Community College Board

Vincent Hobart
Instructor, Electric Vehicle and Energy Storage
Heartland Community College

David Husemoller
Executive Director
Illinois Green Economy Network (IGEN)

Meagan Mitchell, PhD
Director of Pathways
Education Systems Center at Northern Illinois University

Curt Rendall
Executive Director, Program Development and Innovation
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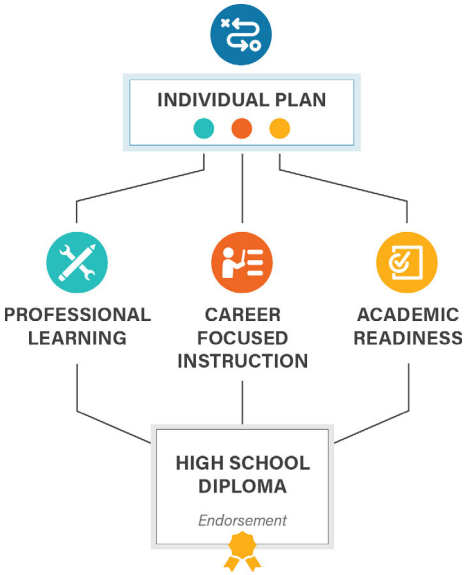
James Stafford
Assistant Professor & Automotive Program Coordinator
Kankakee Community College

Dana Wynn
Director for Clean Energy
Illinois Community College Board

E: College and Career Pathway Endorsements Framework

The College and Career Pathway Endorsements framework is a voluntary system for school districts to award endorsements on high school diplomas to graduates who have demonstrated readiness for college and careers.

College and Career Pathway Endorsements Framework



INDIVIDUAL PLAN

Each student completing an endorsement must have an individualized plan, which includes college planning linked to early understanding of career goals, financial aid, resume, and personal statement.

PROFESSIONAL LEARNING

Awareness, exploration, and preparation activities that provide opportunities for students to interact with adults in their workplace and gain essential employability and technical competencies.

9th	10th	11th	12th
At least 2 career exploration activities or 1 intensive experience		60 cumulative hours of paid or for credit, supervised caree development experience(s) with a professional skills assessment r	
At least 2 team-based challenges with adult mentoring			

CAREER-FOCUSED INSTRUCTIONAL SEQUENCE

2 years of secondary coursework or equivalent that include essential employability and technical competencies, at least 6 hours of early college credit, and articulation to a postsecondary credential with labor market value.

9th	10th	11th	12th
Orientation / Introduction Courses			
	Skill Development Courses		
			Capstone / Advanced Courses

ACADEMIC READINESS

Ready for non-remedial coursework in reading and math by high school graduation through criteria defined by the school district and local community college.

F: Illinois' Work-Based Learning Continuum

Illinois has a defined continuum of work-based learning opportunities, which spans from secondary to postsecondary. Components, defined in statute and the Illinois Career Pathways Dictionary, include career awareness, career exploration, team-based challenges, career development experiences, youth or pre-apprenticeships, and apprenticeships.

Work-Based Learning & Host Engagement Continuums

Illinois' continuum represents the many forms of work-based learning that grow in intensity depending on the model. However, this continuum is not intended to convey a fixed or ideal progression. As individuals learn through their work-based learning experiences, they may return to less intensive models to develop different skills or explore additional interests. Individuals should be supported to engage in these activities iteratively as they explore the multiple entry and exit points of career pathways.

Providing high-quality work-based learning requires strong partnerships between educators and regional employers. As the intensity of students' experiences progress, so too does the role of employer partners serving as host sites.

STATE OF ILLINOIS

Model Programs of Study in Architecture, Construction, and Energy

Recommended Courses

	GRADES 9–10 **Orientation**	GRADES 10–12 **Skill Development**	GRADE 12 **Capstone**	1ST YEAR* **Postsecondary**
Trades & Technicians	Computer Applications for Business *Choose 1:* • Intro to Technology and Engineering (Industrial) • Intro to Engineering Design	Construction Trades I Intro CAD	*Choose 1–2:* • Construction Trades II • Electrical Trades I & II	*Choose 1:* • Apprenticeship Training • Certification Program
HVACR & Maintenance			*Choose 1:* • HVACR I & II • Beginning Welding	
Architecture & Drafting			Civil Engineering and Architecture	*Course Sequence*
Automotive Services		Intro to Automotive *Choose 1–2:* • Brake Systems • Engine Repair	Basic Electrical	
Construction Management		Intro to Business	*Choose 1:* • Intro to Management • Financial Accounting	
Work-Based Learning	Career Exploration (2)	*Choose 1:* Career Development Experience *or* Youth Apprenticeship		
	Team-Based Challenge (2); *may be offered through Career and Technical Student Organizations*			
Math *for Trades & Technicians, Auto, HVACR & Maintenance*	*Choose 1:* • Algebra I *(or higher)* • Geometry *(Geometry in Construction if available)*	Geometry *(Geometry in Construction if available)* Algebra II *(or higher)*	*Choose 1:* • Technical Math • Transitional Math: STEM	*Choose 1:* • Technical Math* • College Algebra
Math *for Architecture & Drafting, Construction Management*		Algebra II *(or higher)* Pre-Calculus	*Choose 1:* • College Algebra • Calculus • Statistics	*Choose 1:* • College Algebra* • Trigonometry • Calculus*
English	*English sequence*	*English sequence*	*Choose 1:* • Transitional English • English Composition	*Choose 1:* • English Composition* • Oral Communication
Science	*Science sequence*	Physics *(or science sequence)*	Survey of Renewable Energy *(if available, or science sequence)*	*Science sequence*
Social Science	*Social science sequence*	*Social science sequence*	*Social science sequence*	*Social science sequence*

KEY: *AP or dual credit course* · *Dual credit course* · *College & Career Pathway Endorsement* · *Dual credit course with IAI* · *Postsecondary course with IAI*

** If credit was already earned through an early college course, take the next requirement in the sequence or, if none, additional AAS or major courses*

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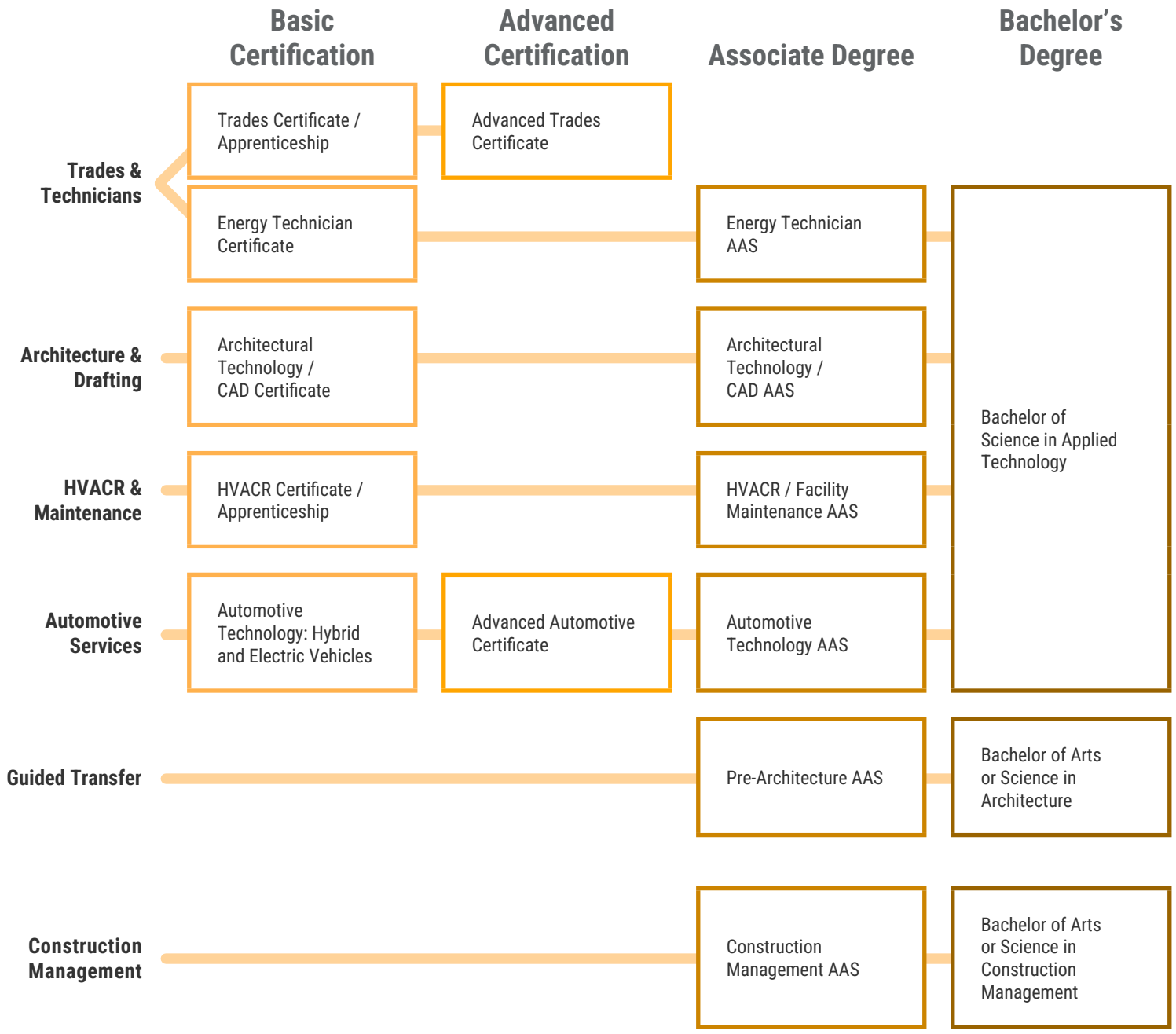
Revised May 2025

Postsecondary Opportunities



Selected Occupations, Wages, and Job Growth

Program	Typical Job(s)	Living Wage Potential*	Median Hourly Wage**	IL Growth: Change over 10 years ***	IL Annual Job Openings***	Typical Educational Requirements
Trades & Technicians	Carpenters	Medium	$33.38	1%	2,490	High School Diploma
	Construction & Building Inspectors	Medium	$35.62	-2%	370	
	Construction Laborers	Medium	$29.94	5%	3,240	
	Electrical Power-Line Installers & Repairers	High	$52.80	9%	398	
	Electrical Engineering Technicians	Medium	$34.17	0.33%	265	Associate Degree
	Electricians	High	$46.42	7%	2,073	
	Energy Auditors	Medium	$35.09	-2%	370	
	Plumbers, Pipefitters, & Steamfitters	High	$45.43	2%	1,369	High School Diploma
	Roofers	Medium	$30.97	2%	520	
	Solar Energy Installation Managers	High	$46.58	4%	1,330	
	Solar Sales Representative & Assessors	High	$56.73	4%	500	Bachelor's Degree
	Solar Thermal Installers & Technicians	High	$45.43	3%	1,370	High School Diploma
	Wind Energy Operations Managers	High	$63.50	0%	3,100	Bachelor's Degree
Architecture & Drafting	Architects	High	$40.69	4%	370	Bachelor's Degree
	Architectural & Civil Drafters	Medium	$28.68	0%	291	
HVACR & Maintenance	Heating, Air Conditioning, and Refrigeration Mechanics & Installers	Medium	$28.93	9.5%	967	Postsecondary Certificate + Some College
	First-Line Supervisors of Mechanics, Installers, & Repairers	Medium	$37.67	9.6%	1,434	High School Diploma + Some College
Automotive Services (Clean Energy)	Automotive Service Technicians & Mechanics	Low	$24.05	2%	2,950	Postsecondary Certificate + Some College
	Bus & Truck Mechanics	Medium	$31.00	2%	759	High School Diploma
	Mechanical Engineering Technicians	Medium	$33.12	1%	138	Associate Degree
Construction Management	Construction Managers	High	$52.66	4%	1,698	Bachelor's Degree
	Cost Estimators	Medium	$38.68	-2%	489	
	First-Line Supervisors of Construction Trades	High	$47.29	4%	1,326	High School Diploma

* Living wage potential is based on MIT's Living Calculator (livingwage.mit.edu) for Illinois in 2025. Occupations with median salaries higher than the living wage for 1 adult + 1 child ($40.41/hour) are considered as having a "high" living wage potential. Occupations with median salaries only higher than the living wage of 1 adult, no children ($23.56/hour) are considered as having a "medium" living wage potential, and occupations with median salaries below the living wage of 1 adult, no children (less than $23.56/hour) are considered as having a "low" living wage potential.

** Illinois Department of Employment Security (2022). Wage Information: Occupational Employment and Wage Statistics (Statewide). Retrieved March 2025, from ides.illinois.gov/resources/labor-market-information/oews.html

*** Illinois Department of Employment Security. Employment Projections (Long-Term Occupational Projections 2020-2030). Retrieved March 2025, from ides.illinois.gov/resources/labor-market-information/employment-projections.html