

Technical and Employability Competencies for Montgomery County, Ohio

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At a Glance

This tool defines industry-informed technical and employability competency statements for the aviation and aerospace, health science, information technology, and skilled trades sectors in Montgomery County, Ohio. The competency statements in this document were developed in collaboration with industry experts and education leaders and are a tool to support the design of comprehensive college and career pathways for the region.

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About JFF

JFF is a national nonprofit that drives transformation in the American workforce and education systems. For 35 years, JFF has led the way in designing innovative and scalable solutions that create access to economic advancement for all. Join us as we build a future that works.

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About Montgomery County Educational Services Center Business Advisory Council

The Montgomery County Educational Services Center Business Advisory Council (BAC) ensures that the region's workforce can compete by enhancing partnerships between schools, higher education, and employers. The goals of the BAC are to ensure student success and career readiness, help new and existing businesses thrive, keep talent in the region, and make Montgomery County a great place to live and work.

Purpose of This Tool

This tool clearly defines the skills and abilities (competencies) necessary for a high school student to successfully advance into higher education, specialized industry training such as apprenticeships, or an entry-level position in an industry. Multiple stakeholders can use these competencies to support the process of designing college and career pathways that help students succeed in their educational and career goals.

This tool contains technical competencies for four industries in Ohio's Montgomery County region: aviation and aerospace, health science, information technology (IT), and the skilled trades (construction).

These industries were selected because they include high-demand, high-growth, and high-wage occupations that provide opportunities for career advancement in Montgomery County. Industry leaders and educators from across the region collaborated to develop competency statements that include: (1) the knowledge students need to develop, and (2) how they should be able to apply that knowledge in a work environment.

Stakeholders can use these competency statements to:

- **Communicate clear goals for work-based learning experiences**

Employers, including supervisors and mentors, can use competencies to identify and assign work projects and learning experiences that enable students to develop critical industry-aligned skills.

Educators can work with employers and students to determine the purpose and outcomes of an internship, job shadow, or other work-based learning experiences.

- **Identify high-impact coursework for students**

Secondary educators can add opportunities for students to develop these competencies into the core curriculum and career and technical education programming.

Postsecondary educators can identify courses, including dual enrollment courses, that lead students to developing industry-aligned competencies.

- **Support students in communicating critical skills**

Students and families can review the competencies to communicate their professional development and learning goals during an internship, job shadow, or other work-based learning experience.

Students can articulate the skills they developed and give clear examples of situations that demonstrate those skills to a potential employer.

Career advisors and guidance counselors can work with students and classroom educators to support students in developing these competencies.

What are Competencies?

The U.S. Department of Labor defines a competency as “a cluster of related knowledge, skills, and abilities that affects a major part of one’s job that correlates with performance on the job, that can be measured against well-accepted standards and can be improved through training development and experience.” It is important that competency statements combine learned content with the application of skills and abilities that can be demonstrated and evaluated. They also apply to current industry needs, contain both employability and technical skills, and leave opportunity for specialized training and career advancement.

Competencies are organized into two broad categories: industry-aligned technical competencies and essential employability competencies (as outlined in the Ohio Means Jobs Readiness Seal).

Technical competencies relate to specific industry knowledge and skills, and the ability to apply that learning in a workplace environment. Essential employability competencies are workplace dispositions and attitudes connected to often-performed work tasks and behaviors, such as collaboration and critical thinking. They are often referred to as employability skills or “soft” skills. Employability competencies are applicable across many industries and include the ability to connect industry knowledge to one’s personal efficacy in completing work-related responsibilities and contributing actively to a workplace environment. The employability competencies outlined in the Ohio Means Jobs Readiness Seal apply across all sectors.

Montgomery County’s universal employability and industry-specific technical competencies serve as indicators that a student is ready to enter an industry or to pursue further education. Taken together, these competencies will inform how schools design pathways courses and work-based learning experiences.

Research Approach and Development Process

These competencies were developed through an iterative process involving industry leaders, educators, and experts from across Ohio's Montgomery County from June 2019 to January 2020. The process was led in partnership by the Montgomery County Educational Services Center (MCESC) and JFF's Pathways to Prosperity Network.

MCESC and JFF engaged local industry experts across aviation and aerospace, health science, IT, and the skilled trades. These experts participated in steering committees to review national research and data from Ohio-based human resource professionals, draft, and verify the competencies outlined in this document. All four industry areas used the iterative competency mapping process that follows.

Phase 1: Analysis of Historical and Real-Time Labor Market Information

During Phase 1, JFF analyzed historical and real-time labor market information to identify high-growth, high-demand, high-wage industries in the region. This analysis included

- Reviewed and analyzed existing national resources for labor market information (e.g. Department of Labor, O*Net, and national credentialing agencies)
- Identified industry-specific implications related to the future of work including the potential benefits or risks of enhanced technological developments and increasingly global working environments.

Phase 2: Analysis of National Resources and Local Talent Pipeline Demands

To ensure the competencies aligned with local labor market demand, during Phase 2 JFF:

- Interviewed local human resources and talent acquisition professionals in each industry
- Reviewed and analyzed state and/or regional entry-level job descriptions and identified trends and implications

Phase 3: Establish Sector-Specific Steering Committee for Iterative Review

In Phase 3, MCEC identified and convened the industry-specific steering committees. The committees reviewed the national and local research and decided on the top ten essential employability and sector-specific technical competencies. MCEC and JFF held a series of in-person and virtual committee meetings.

Local industry leaders with the following expertise participated in the committees:

- Human resources and talent acquisition
- Workforce development and training
- Secondary education
- Higher education
- Career and technical education

Phase 4: Public Comment Period

To ensure accuracy and to encourage wide adoption by educators and employers, JFF and MCEC collected broad-based industry feedback through a digital survey. The survey included a two-month open comment period for community members, families, education leaders, and industry stakeholders. The survey was distributed widely throughout Montgomery County and completed by over 100 human resources managers, talent acquisition specialists, education professionals, and community members. JFF and MCEC then worked with the steering committees to analyze and incorporate the feedback and finalize the competencies.

Technical Competencies for Montgomery County College and Career Pathways

The industry-aligned technical competencies that follow outline the skills and abilities necessary for a student to transition into entry-level occupations, postsecondary education, or specialized skills training.

Aviation and Aerospace Technical Competencies



Project management and process	Students can use their ability to interpret project needs, set deadlines, and sequence activities in order to effectively complete a project in a timely manner.
Troubleshooting	Students can use their ability to apply a systematic approach to identifying, isolating, and testing solutions in order to implement a solution or solve a problem.
Technical writing and editing	Students can use their understanding of clear, grammatically correct, and concise written communications in order to convey accurate messages in professional workplans, emails, and informative documents.
Fundamentals of physics and industry math	Students can use their understanding of the basic laws of physics and algebraic logic in order to apply concepts to projects and solve relevant problems.
Fundamentals of systems engineering	Students can use their understanding of the relationships among multiple systems in order to manager and monitor programming.
Cybersecurity	Students can use their understanding of operating systems, networks, telecommunications, and cryptography in order to maintain secure systems.
Risk management and compliance	Students can use their understanding of the standards, applications, and regulatory requirements necessary to protect confidentiality, integrity, and availability of information.
Quality assurance and control	Students can use their understanding of product and process to meet systems quality requirements as defined my customer specifications.
Financial and resource management	Students can use their understanding of the principles of managing, monitoring, and controlling resources including assets, money, and products in order to achieve project expectations.
Fundamentals of computer programming and software development	Students can use their understanding of designing, writing, testing, and maintaining source code in order to manage and edit software.

Health Science

Technical Competencies



Customer service and patient focus	Students can use their understanding communication, active listening, and conflict resolution, in order to identify and meet the needs of a patient or customer.
Health professional licensure	Students can use their understanding of appropriate industry education requirements, licensure, and certification in order to ensure adherence to regulations that guide service delivery.
Healthcare industry ethics	Students can use their understanding of confidentiality, morality, and legal concepts in order to evaluate and apply the merits, risks, and social concerns to workplace decisions.
Healthcare safety systems and environment	Students can use their understanding of health and safety procedures and protocols in order to ensure a safe, secure, and healthy work environment.
Medical terminology	Students can use their understanding of basic medical terminology including abbreviations, acronyms, and diagnostic terms to communicate effectively with healthcare personnel and patients.
Computer applications, records, and data recording	Students can use their understanding of keyboarding, data entry, and work processing in order to accurately record information on health technology systems.
Healthcare sanitation	Students can use their understanding of health cleanliness regulations and sanitation procedures in order to ensure that healthcare facilities and tools meet standards for cleanliness.
Healthcare rules and regulations	Students can use their understanding of basic laws and regulations (Patient Bill of Rights, CLIA, EMTALA, OSHA, etc.) to meet accreditation standards and obey the law.
Healthcare confidentiality	Students can use their understanding of HIPPA in order to adhere to legal requirements and maintain confidentiality.
Professional working environments	Students use their understanding of cross-functional working environments, the importance of a sequence of tasks, and professional communication in order to successfully work as part of a team.

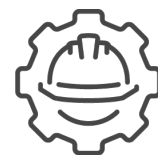
Information Technology Technical Competencies



User and customer support	Students can use their understanding of the range of services and customer-focused approaches used to provide assistance and technical support in order to help users solve problems and implement solutions related to IT.
Principles of IT systems and concepts	Students can use their understanding of fundamental IT concepts, systems, platforms, and tools to understand the common roles and career trajectories of IT professionals.
Security, compliance, and risk management	Students can use their understanding of malware, firewall, IDS, and legal or regulatory requirements in order to recognize basic threats to networked computers and ensure procedures are in place for compliance.
Word processing, spreadsheet, and presentation software	Students can use their understanding of Microsoft Office and Google Suite in order to create written documents, organize data, and develop visual presentations.
Logic and fundamentals of computer languages	Students can use their understanding of how computer languages communicate to build basic mobile and web applications.
Principles of data and documentation	Students can use their understanding of numerical sequencing, information flow, data, and record keeping in order to understand the role of technology in converting data into organized content and maintaining accurate records.
Principles of software	Students can use their understanding of designing, writing, testing, and maintaining source code of computer program in order to manage, maintain, and edit software.
Routing and network configurations	Students can use their understanding of common networking protocols in order to explain the purpose of routing, monitoring, and network configurations.
Servers and storage	Students can use their understanding of data backup systems in order to store and recover information.
Fundamentals of cloud computing and virtualization	Students can use their understanding of the features, benefits, and concepts of cloud computing in order to among and communicate options of cloud services.

Skilled Trades (Construction)

Technical Competencies



Math in application to the skilled trades	Students can practically apply their understanding of basic mathematical concepts in order to accurately take and report measurements, estimate material needs, and calculate resources.
Selection and usage of tools and materials	Students can practically apply their understanding of options of building materials, tools and criteria for selection in order to handle, install, and secure materials properly.
Health, safety, and security	Students can practically apply their understanding of hazardous materials, environmental hazards, safety regulations, and emergency response in order to maintain a safe and secure worksite and mitigate any danger for self and team.
Craftsmanship	Students can practically apply their understanding of up-to-date product standards in order to complete high quality projects leading to a sense of pride and accomplishment.
Basics of blueprints and construction design	Students can practically apply their understanding of the coordination of sitework and the basics of blueprint drawing to interpret dimensions, scale, views, and three-dimensional visuals in order to convert a blueprint into a construction project.
Planning, scheduling, and project management	Students can practically apply their ability to manage time, interpret project needs, set deadlines, and interpret instructions in order to accomplish tasks in the appropriate order and in a timely manner.
Basics of applied computer use	Students can practically apply their understanding of internet applications and computer tools in order to record project updates, read blueprints, learn new programs, and communicate using technology.
Health, safety, and security	Students can practically apply their understanding of hazardous materials, environmental hazards, safety regulations, and emergency response in order to maintain a safe and secure worksite and mitigate any danger for self and team.
Installation sequences and differentiation	Students can practically apply their understanding the differences in and materials used across the major trades/crafts (concrete, steel, pipefitting, electrical, and finishing) in order to understand the sequence of an overall project.
Customer service	Students can practically apply active listening and communication skills to effectively understand the chain of command on a job site in order to meet various projects and customer demands.
Fundamentals of business and operations	Students can practically apply their understanding of cross-functional fundamental business practices (professionalism in a work environment, the importance of a sequence of activities, and the relationship between cost and project) in order to successfully work as part of a team.

Essential Employability Competencies and the Ohio Means Jobs Readiness Seal

To account for skills and knowledge that apply across all industries and are necessary for success within the future of work and learning, the state of Ohio implemented the Ohio Means Jobs Readiness Seal in 2018. The Ohio Means Jobs Readiness Seal is a formal designation on a high school diploma that indicates a student has demonstrated the competencies listed below.¹

The essential employability competencies that follow were developed through a collaborative process between the Ohio Department of Education, Governor's Office of Workforce Transformation, and the Ohio Department of Higher Education. State partners reviewed reports by the National Association of Colleges and Employers, Partnership for 21st Century Skills, the Society for Human Resource Management, and Corporate Voices for Working Families. The state also surveyed 230 business leaders to verify and define the essential employability competencies.²

Summary

Montgomery County's leaders in K-12, postsecondary education, and industries can use these competencies to design work-based and classroom learning experiences that lead to desired outcomes and are informed by real industry requirements. The technical competencies defined for the aviation and aerospace, health science, information technology, and skilled trades industries were informed by regional labor market information and developed in partnership with regional experts. The essential employability competencies defined by the Ohio Means Jobs Readiness Seal are transferable skills and abilities that students need regardless of the industry they choose.

By defining both technical and employability competencies, educators, employers, students, and industry leaders develop a shared understanding of and language for in-demand knowledge and application of skills. This makes a future where all young people can plan for and achieve future educational and career success closer to today's reality.

Essential Employability Competencies



Reliability	The student has integrity and responsibility in professional settings.
Work ethic	The student has effective work habits, personal accountability, and a determination to succeed.
Punctuality	The student arrives to commitments on time and ready to contribute.
Discipline	The student abides by guidelines, demonstrates self-control, and stays on task.
Teamwork and collaboration	The student builds collaborative relationship with others and can work as part of a team.
Professionalism	The student demonstrates honesty. He or she dresses and acts appropriately and responsibly. He or she learns from mistakes.
Learning agility	The student desires to continuously learn new information and skills.
Critical thinking / problem solving	The student exercises strong decision-making skills, analyzes issues effectively, and thinks creatively to overcome problems.
Leadership	The student leverages the strengths of others to achieve common goals. He or she coaches and motivates peers and can prioritize and delegate work.
Creativity / innovation	The student is original and inventive. He or she communicates new ideas to others, drawing on knowledge from different fields to find solutions.
Oral and written communication	The student articulates thoughts and ideas clearly and effectively in written and oral forms.
Digital technology	The student has an in-depth understanding of emerging technology and leverages technology to solve problems, compete tasks, and accomplish goals.
Global / intercultural fluency	The student values, respects, and learns from diverse groups of people.
Career management	The student is a self-advocate. He or she articulates strengths, knowledge, and experiences relevant to success in a job or postsecondary education.

Endnotes

¹ <https://successbound.ohio.gov/Ohio-Means-Jobs-Readiness-Seal/Ohio-Means-Jobs-Readiness-Seal-For-Students-and-Families>

² <http://education.ohio.gov/getattachment/Topics/New-Skills-for-Youth/SuccessBound/OhioMeansJobs-Readiness-Seal/OhioMeansJobs-Readiness-Seal-FAQs.pdf.aspx?lang=en-US>