

WHO WE ARE

SHANNON COX

SUPERINTENDENT

MONTGOMERY CTY ESC



WHO WE ARE

CANDICE SEARS

DIRECTOR OF INSTRUCTIONAL
SERVICES

MONTGOMERY CTY ESC



WHY?



- 1 MEETING WORKFORCE DEMANDS
- 2 ECONOMIC GROWTH
- 3 ALIGNMENT WITH INDUSTRY NEEDS
- 4 SOCIAL EQUITY

COLLABORATIVE PROCESS

- 1 Partnered with Jobs for the Future (JFF)
 - 2 Higher Education Partners
 - 3 Learn to Earn Dayton
 - 4 Industry Associations
-

Pathways Models

ADV. MANUFACTURING

AEROSPACE/ AVIATION

COMPUTER SCIENCE/ IT

HEALTH SCIENCE

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Montgomery County Health Science Pathway

Academic Coursework

Grade	Course	Prerequisite	Corequisite	Notes
9	Health Science and Technology	None	None	Required for all students in the pathway.
10	Health Science	Health Science and Technology	None	Required for all students in the pathway.
11	Health Science	Health Science	None	Required for all students in the pathway.
12	Health Science	Health Science	None	Required for all students in the pathway.

College and Career Preparation

These advanced courses suggest students preparing for post-secondary success must choose relevant courses that align with their interests and career goals. Students should consult their advisors for more information.

Grade	Course	Prerequisite	Corequisite	Notes
11	College Algebra	Math 1	None	Required for all students in the pathway.
12	Calculus	College Algebra	None	Required for all students in the pathway.

Health Science Technical Competencies

- Communication: Ability to communicate effectively in written and oral forms.
- Healthcare Information Systems: Ability to use electronic health records and other healthcare information systems.
- Healthcare Safety and Infection Control: Ability to maintain a safe and clean healthcare environment.
- Healthcare Law and Regulation: Ability to understand and apply healthcare laws and regulations.
- Healthcare Quality Improvement: Ability to identify and improve healthcare quality.

Selected Postsecondary Options

Program	Prerequisite	Corequisite	Notes
Health Science	Health Science	None	Required for all students in the pathway.
Health Science	Health Science	None	Required for all students in the pathway.

Selected Occupations, Wages, and Job Growth

Occupation	Top Salary	Median Salary	Job Outlook	Education	Training	Years
Medical Assistant	\$14.50	\$12.50	Good	High School	1-2	10%
Medical Receptionist	\$12.50	\$11.50	Good	High School	1-2	10%
Medical Office Assistant	\$13.50	\$12.50	Good	High School	1-2	10%
Medical Billing and Coding	\$15.50	\$14.50	Good	High School	1-2	10%
Medical Laboratory Assistant	\$14.50	\$13.50	Good	High School	1-2	10%
Medical Records and Health Information Management	\$16.50	\$15.50	Good	High School	1-2	10%
Pharmacy Technician	\$15.50	\$14.50	Good	High School	1-2	10%
Diagnostic Medical Sonographer	\$25.50	\$24.50	Good	High School	1-2	10%
Dental Hygienist	\$28.50	\$27.50	Good	High School	1-2	10%
Registered Nurse	\$35.50	\$34.50	Good	High School	1-2	10%
Medical Records	\$18.50	\$17.50	Good	High School	1-2	10%

Montgomery County Information Technology/Computer Science Pathway

Regional pathway models support the alignment of stakeholders including employers, higher education, K-12, and workforce, to ensure pathways prepare young people for careers with family-supporting wages and build a robust talent pipeline for employers. Pathway models demonstrate a vision from 8th grade to career including high school coursework, college and career preparation activities, potential postsecondary programs, and in-demand jobs in the regional labor market. This is a living document that will need to be updated regularly to reflect current education programs and workforce needs.

Academic Coursework

This general coursework is recommended for all students in the IT/computer science pathway.

	Grade 8	Grades 9 and 10	Grade 11	Grade 12	
Career Focused Courses	Information Technology Networking Programming	Foundational IT/Comp Sci or CCP Course such as: <ul style="list-style-type: none"> ⊕ CIS 1107–Introduction to Operating Systems ⊕ BIS 1120–Introduction to Software Applications ⊕ BIS 1105–IT Fundamentals 	Strategic CCP Course such as: <ul style="list-style-type: none"> ⊕ CIS 1130–Network Fundamentals ⊕ CIS 1111–Introduction to Problem Solving and Computer Programming 	Strategic CCP Course such as: <ul style="list-style-type: none"> ⊕ CIS 1140–Information Systems Analysis and Design ⊕ CIS 2165–Database Management 	<ul style="list-style-type: none"> ⊕ Note: College Credit Plus courses apply to both high school and postsecondary requirements, saving students time and money. Students who complete the following six courses can earn the IT Fundamentals Certificate at Sinclair Community College: BIS 1120, CIS 1107, CIS 1111, CIS 1130, CIS 1140, CIS 2165
English	Grade 8 English	English I English II	English III	English IV <ul style="list-style-type: none"> ⊕ ENG 1101–English Composition I 	
Math	Algebra I	Geometry <ul style="list-style-type: none"> ⊕ MAT 1470–College Algebra 	Algebra II	Trigonometry/Calculus	
History	Social Studies	World History	US History	US Government	
Science	Physical Science	Biology	Chemistry	Physics	

COLLEGE & CAREER PREPARATION

Work-Based Learning	Career Exploration: <ul style="list-style-type: none"> • Career Adventures Course—IT • Work-Site Tours • Power Lunches • Pathway Fairs 	Career Planning: <ul style="list-style-type: none"> • Job Shadow • HR Interview • Virtual Pathway Mentor • Resume Prep 	Career Planning: <ul style="list-style-type: none"> • Internship • Career Fair • Mock Interview 	Career Planning: <ul style="list-style-type: none"> • Internship • Career Fair • Mock Interview • Exposure to Related Software Languages
Advising	<ul style="list-style-type: none"> • YouScience 	<ul style="list-style-type: none"> • Individualized College and Career Plan (ICCP) • Confirmation of Pathway • Identification of Credentials and College Options • Revisit ICCP 	<ul style="list-style-type: none"> • Financial Literacy Course • College Application Prep Work • Industry Recognized Credential Examination 	<ul style="list-style-type: none"> • Free Application for Federal Student Aid (FAFSA) • Complete Ohio Means Jobs (OMJ) Readiness Seal • College and Career Signing Day
Competencies	<ul style="list-style-type: none"> • Employability Skills Course 	<ul style="list-style-type: none"> • User and Customer Support • Principles of IT Systems and Concepts • Principles of Data and Documentation • Logic and Fundamentals of Computer Languages • Principles of Software • Word Processing, Spreadsheet, and Presentation Software 	<ul style="list-style-type: none"> • Security, Compliance, and Risk Management • Routing and Network Configurations • Servers and Storage • Fundamentals of Cloud Computing and Virtualization 	<ul style="list-style-type: none"> • Individualized Specialization

IT/Computer Science Technical Competencies

User and Customer Support

Use 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

Use understanding of fundamental IT concepts, systems, platforms, and tools to understand the common roles and career opportunities of the technology.

Principles of Data and Documentation

Use 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.

Logic and Fundamentals of Computer Languages

Use understanding of how computer

Principles of Software

Use understanding of designing, writing, testing, and maintaining source code of computer program to manage, maintain, and edit software.

Word Processing, Spreadsheet, and Presentation Software

Use understanding of Microsoft Office and Google Suite to create written documents, organize data, and develop visual presentations.

Security, Compliance, and Risk Management

Use understanding of malware, firewall, IDS, and legal or regulatory requirements to recognize basic threats to networked computers and ensure procedures are in place for compliance.

Routing and Network Configurations

Use understanding of common networking protocols to explain the purpose of routing, management, and configuration.

Servers and Storage

Use understanding of data backup systems to store and recover information.

Fundamentals of Cloud Computing and Virtualization

Use understanding of the features, benefits, and concepts of virtualization to differentiate among types of cloud services.

Selected Postsecondary Options

The selected postsecondary credentials in IT/computer science are based on program options and transfer agreements at Sinclair Community College. Some education paths have credentials that easily stack or build from the previous credential, while others are not as easily stackable. Stackable credentials can help an individual progress in their career pathway or move up a career ladder to different or higher paying jobs. Within the fields of IT and computer science, a particular education credential can prepare students for a variety of occupations.

	 Potential Initial Credential	 Stackable Credentials	 Typical Occupational Outcome
Computer Information Technology	<ul style="list-style-type: none"> • CompTIA A+ • CompTIA IT Fundamentals+ 	<ul style="list-style-type: none"> • Computer Information Systems—User Support Associate of Applied Science Students eligible to take the following certification exams: A+, Network+, Security+, MCSA Exam TestOut Client Pro 	<ul style="list-style-type: none"> • Computer Information Systems Bachelor of Science • Computer Network Support Specialist • Computer User Support Specialist
	<ul style="list-style-type: none"> • CompTIA IT Fundamentals+ • CompTIA A+ • CCENT • Network+ • MTA 	<ul style="list-style-type: none"> • Computer Information Systems—Network Engineering Associate of Applied Science Students eligible to take the following certification exams: CCNA, Security+, A+, MCSA Exam TestOut Server Pro 2016: Install and Storage* *This credential is connected to an optional elective course, students need to take that specific elective in order to take the certification exam. 	<ul style="list-style-type: none"> • Network Administrator • Network Security Analyst • Network Engineer
	<ul style="list-style-type: none"> • CompTIA IT Fundamentals+ • MTA • CompTIA A+ • OCAJ 	<ul style="list-style-type: none"> • Computer Information Systems—Software Development Associate of Applied Science Students eligible to take the Network+ certification exam 	<ul style="list-style-type: none"> • Software Developer • Web Developer • Help Desk Analyst • Network Administrator • User Support Specialist • Network Security Analyst • Network Engineer
Cybersecurity: Prevention and Investigation Technology	<ul style="list-style-type: none"> • CompTIA IT Fundamentals+ • CompTIA A+ • MTA 	<ul style="list-style-type: none"> • Computer Information Systems—Secure System Administration Associate of Applied Science Students eligible to take the following certification exams: Network+, Linux+, Security+, MCSA Exam TestOut Server Pro 2016: Install and Storage, MCSA Exam TestOut Server Pro 2016: Networking, MCSA Exam TestOut Server Pro: Identify, Securing Windows Network Environment 2016 Exam 	<ul style="list-style-type: none"> • Information Technology and Cybersecurity Bachelor of Science • Cybersecurity Analyst/Technician • Cyber Crime Analyst/Investigator • Incident Analyst/Responder • IT Auditor
	<ul style="list-style-type: none"> • CompTIA IT Fundamentals+ 	<ul style="list-style-type: none"> • Cyber Investigation Technology Associate of Applied Science Students eligible to take the following certification exams: A+, Network+, Linux+, Security+, MCSA Exam TestOut Server Pro 2016: Install and Storage, Securing Windows Network Environment 2016 Exam 	<ul style="list-style-type: none"> • Intelligence Analyst • IT Specialist • Systems Administrator • Network Engineer • Information System Security Manager • Cyber Security Incident Response Specialist • Private Investigator
Guided Transfer	<ul style="list-style-type: none"> • CompTIA IT Fundamentals+ • CompTIA A+ • CompTIA Security+ 	<ul style="list-style-type: none"> • Computer Science Associate of Science 	<ul style="list-style-type: none"> • Computer Science Bachelor of Science • Software Developer • Software Engineer • Data Engineer

Selected Occupations, Wages, and Job Growth

The IT and computer science careers listed below are projected to grow in the region. The living wage (\$23.16/hour) is from the MIT Living Wage Calculator for one adult and one child in Montgomery County in 2021. Note that all occupations included have median hourly earnings above a living wage, but that some jobs have a large pay range; this means that employees who have less experience, credentials, and skills can be paid significantly less than the median wage, which can be seen in the "entry level wages" column. The last column shows national data on how many workers in these positions have a bachelor's degree or higher, indicating that for some positions, a four-year degree is an important credential.

Typical Job	Alternate Job Titles	Pays Living Wage (\$23.16)			Expected Growth (2020-2025)		Typical Work Experience Required	National data Workers with a Bachelor's or Higher*
		Median Hourly Earnings	Entry Level Wages	Positions (2020)	Positions	Percent		
Software Developers	<ul style="list-style-type: none"> Application Developers Systems Engineer 	\$44.13	\$26.68	5,561	646	12%	None	85%
Computer Systems Analysts	<ul style="list-style-type: none"> Information Technology Analyst 	\$42.09	\$26.36	1,740	127	7%	None	73%
Computer and Information Systems Managers	<ul style="list-style-type: none"> Application Development Director IT Director 	\$63.86	\$41.01	943	92	10%	5+ Years	73%
Computer User Support Specialists	<ul style="list-style-type: none"> Desktop Support Technician Help Desk Analyst 	\$25.39	\$15.82	2,129	71	3%	None	48%
Information Security Analysts	<ul style="list-style-type: none"> Information Security Officer Network Security Analyst 	\$47.61	\$27.32	373	65	17%	Less Than 5 Years	67%
Network and Computer Systems Administrators	<ul style="list-style-type: none"> Network Administrator Systems Administrator 	\$37.41	\$23.56	955	27	3%	None	54%
Computer Network Architects	<ul style="list-style-type: none"> Network Analyst Network and Security Engineer 	\$43.36	\$28.72	293	23	8%	5+ Years	57%
Web Developers	<ul style="list-style-type: none"> Web Designer Webmaster 	\$38.45	\$21.03	750	6	1%	None	68%

This document was developed by JFF, Learn to Earn Dayton, and the Montgomery County ESC. Special thanks to Sinclair Community College and the Technology First Workforce Committee for your feedback and contributions.

GOALS OF THE DESIGN LAB

AUDIENCE: K-12 EDUCATION TEAMS

**Engage in Health Science Pathway
Design Thinking**

Audit of Existing Resources

Identification of Gaps

Exploration of Gaps

Asset Mapping of Existing Resources

WHAT IS CURRENTLY OFFERED WITHIN YOUR DISTRICT?

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Academic Coursework

This general coursework is recommended for all students in the health science pathway.

	Grade 8	Grades 9 and 10	Grade 11	Grade 12
Career Focused Courses	Health Science and Technology	Foundational Health Science or CCP Course such as: + ALH 1101-Introduction to Healthcare Delivery	Strategic CCP Course such as: + HIM 1101-Medical Terminology	Strategic CCP Course such as: + PSY 1100-General Psychology + College Credit Plus (CCP) courses apply to a broad range of postsecondary programs in health science. The credits apply to both high school and postsecondary requirements, saving students time and money.
English	Grade 8 English	English I, English II + ENG 1101-English Composition	English III + COM 2206-Interpersonal Communication	English IV + COM 2206-Interpersonal Communication
Math	Grade 8 Math or Algebra I	Algebra I, Geometry + MAT 1470-College Algebra	Algebra II	Trigonometry/Calculus + MAT 1470-College Algebra
History	Social Studies	World History	US History	US Government
Science	Physical Science	Biology + BIO 1107-Human Biology	Chemistry	Physics + BIO 1141-Principles of Anatomy & Physiology I

College and Career Preparation

These additional activities support students in preparing for both college and career. Work-based learning enables students to apply their academic learning in a real-world setting. Advising supports students in making decisions that align best with their strengths and future goals. Competencies describe the technical skills students need for a successful career in the health sciences.

	Grade 8	Grades 9 and 10	Grade 11	Grade 12
Work-Based Learning	Career Exploration: • Career Adventures Course-Healthcare • Work-Site Tours • Power Lunches • Pathway Fairs • YouScience	Career Planning: • Job Shadow • HR Interview • Virtual Pathway Mentor • Resume Prep • Individualized College and Career Plan (ICCP) • Confirmation of Pathway • Identification of Credentials and College Options • Revisit ICCP	Career Planning: • Internship • Career Fair • Mock Interview • Financial Literacy Course • College Application Prep Work • Industry Recognized Credential Examination	Career Planning: • Internship • Career Fair • Mock Interview • Free Application for Federal Student Aid (FAFSA) • Complete Ohio Means Jobs (OMJ) Readiness Seal • College and Career Signing Day
Advising		• Employability Skills • Computer Applications, Records, and Data Recording • Professional Working Environments • Healthcare Rules and Regulations • Healthcare Industry Ethics • Healthcare Confidentiality	• Medical Terminology • Customer Service and Patient Focus • Healthcare Safety Systems and Environment • Healthcare Professional Licensure • Healthcare Sanitation	• Individualized Specialization

Health Science Technical Competencies

Computer Applications, Records, and Data Recording
Use understanding of keyboarding, data entry, and word processing to accurately record information on health technology systems.

Professional Working Environments
Use understanding of the importance of a sequence of tasks, cross-functional working environments, and professional communication to successfully work as part of a team.

Healthcare Rules and Regulations
Use understanding of basic laws and regulations (Patient Bill of Rights, HIPAA, EMTALA, OSHA, etc.) to meet accreditation standards and obey the law.

Healthcare Industry Ethics
Use understanding of confidentiality, morality, and legal concepts to evaluate and apply the merits, risks, and social concerns to workplace decisions.

Healthcare Confidentiality
Use understanding of HIPAA in order to adhere to legal requirements and maintain confidentiality.

Medical Terminology
Use understanding of basic medical terminology, including abbreviations, acronyms, and diagnostic terms, to communicate effectively with healthcare personnel and patients.

Customer Service and Patient Focus
Use understanding of communication, active listening, and conflict resolution to identify and meet the needs of a patient or customer.

Healthcare Safety Systems and Environment
Use understanding of health and safety procedures and protocols to ensure a safe, secure, and healthy work environment.

Health Professional Licensure
Use understanding of appropriate industry education requirements, licensure, and certification to ensure adherence to regulations that guide service delivery.

Healthcare Sanitation
Use understanding of health care needs regulations and sanitation procedures to ensure that healthcare facilities and tools meet standards for cleanliness.

GOALS OF THE IMPLEMENTATION LAB

AUDIENCE:

K-12 EDUCATION TEAMS

INDUSTRY PARTNERS

HIGHER EDUCATION PARTNERS

**Operationalize/ Implement the
Pathway Model**

**Align on what infrastructure exists &
share examples of strong programs/
opportunities**

**Ensure “middle missing” students
who care about school but don’t have
clear plans after high school have
opportunities to connect their
education to career**

STRUCTURE OF THE LAB

- 1 Local Education & Workforce Context and Assets
 - 2 Regional Highlights: Premier Academies/ Community College/ MCESC
 - 3 From Model to Implementation
 - 4 Partnerships
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HIGHLIGHTS FROM THE DESIGN & IMPLEMENTATION LABS



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