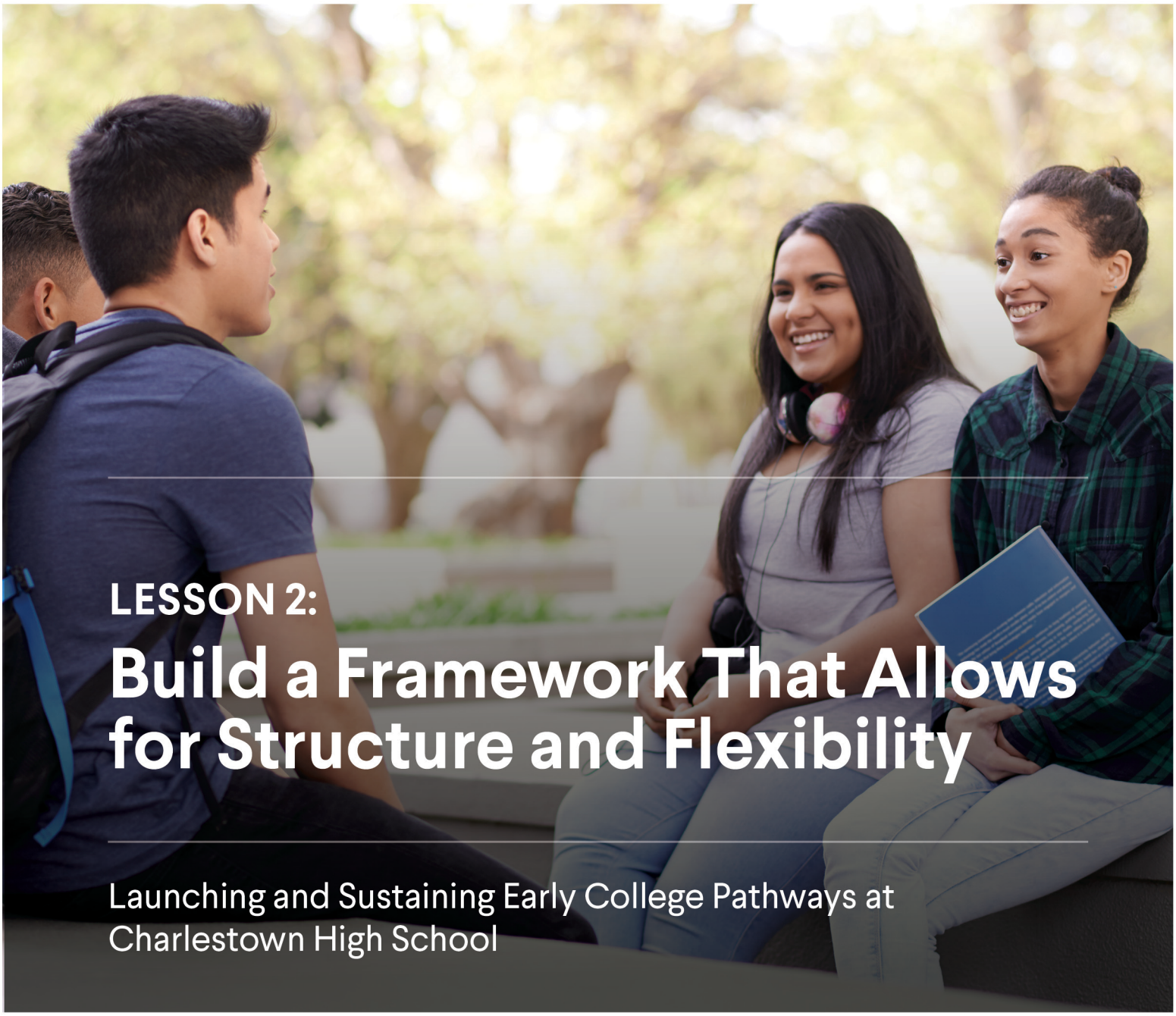

LESSON 2:

Build a Framework That Allows for Structure and Flexibility

Launching and Sustaining Early College Pathways at Charlestown High School

AT A GLANCE

As new early college programs welcome the first cohorts of students, an important asset is a pathways framework that lays out a sequence of courses, aligns to degree programs offered at the partnering college, and provides windows into future careers. This report details how C-Town Pathways staff created a more structured experience that also allows for flexibility and individualization of students' early college journeys.

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We would also like to thank our JFF colleagues Joel Vargas, Nancy Hoffman, Charlotte Cahill, and Kim Perrella, along with the whole communications team, for the input and expertise that helped shape, design, and produce *Three Big Lessons*.

This publication was made possible by the Linde Family Foundation, whose continued support has allowed JFF a unique opportunity to codify and document best practices and important lessons that will benefit the field and the next generation of early college pathways in Massachusetts and across the country.

About JFF

JFF is a national nonprofit that drives transformation in the American workforce and education systems. For nearly 40 years, JFF has led the way in designing innovative and scalable solutions that create access to economic advancement for all. www.jff.org

About the Series

Three Big Lessons in Six Years is both a reflection on the past and a look ahead to the future at Charlestown High School and other early college programs across the country. The purpose of this series is to document essential design elements, operational structures, and critical support for students to be successful. It also presents an authentic view of the troubleshooting required to overcome key initial challenges.

The lessons—*Set a Vision to Guide the Future*, *Build a Framework That Allows for Structure and Flexibility*, and *Build a 'Both/And' Team*—represent three integral parts of C-Town Pathways' journey. It has evolved from a small pilot to a formal, replicable approach that defines and distinguishes CHS within the district—and laid the foundation for a future school redesign process. The lessons also highlight both philosophical and practical questions and, most important, solutions that have since provided the school's staff with nuanced understanding, confidence, and convictions about how to best support students through an early college model.

The three resources in the series can be read as standalone deep dives into key elements of C-Town's model and operations, with a focus on transferable lessons. We see these resources as helpful to practitioners, especially school leaders who are interested in early college pathways and program staff who provide advising and work-based learning support. We also see these documents as useful to both private and public funders as they consider key elements of quality and success when investing in grantees.

In documenting the clarity that comes with hindsight, but also the inevitability of learning as you go, our hope is that educators feel empowered to take informed risks while avoiding some of the growing pains and challenges CHS experienced along the way.

Table of Contents

Introduction

Industry-aligned early college pathways can harness the benefits of dual enrollment and career-focused education to maximize impact for high school students. This "best of both worlds" model, however, requires an intentional and customized design approach to ensure students have the knowledge to be strategic in their pathway choices and educators have the tools to help them navigate the early college experience. A pathways framework that lays out a sequence of courses, aligns to degree programs offered at the partnering college, and provides windows into the future careers is an important asset for the success of early college pathways.

The first two years of the C-Town Pathways early college program—a partnership between Charlestown High School (CHS), an open enrollment high school in Boston Public Schools in Massachusetts, and the nearby Bunker Hill Community College (BHCC), with support from JFF—demonstrated the value of articulating a vision, identifying non-negotiables, and matching messaging to desired outcomes (*learn more in Lesson 1: Set a Vision to Guide the Future*). But as the inaugural two cohorts of students progressed through the pathway and continued to take dual enrollment courses, it became clear that the program's continued growth would require clearer course sequences associated with the pathways.

In particular, the transition between grades 10 and 11, when students started taking dual enrollment courses on the BHCC campus, demonstrated that students wanted to explore a broader range of courses and craved more information about potential careers and that staff needed the tools and industry-specific knowledge to facilitate those conversations. As such, it was important that the new pathways framework was structured, allowing CHS staff to set expectations and support scale as well as flexibility, ensuring that the program continued to center on students' needs, evolving interests, and experiences, in alignment with C-Town's overall vision.

To achieve this balance, JFF worked with the C-Town team to codify the first pathways framework in 2018 with support from the Linde Family Foundation. The framework ensured the course sequences were rigorous and aligned to the regional labor market while drawing on lessons about students' needs and experiences. The goal was to honor students' need for both structure and flexibility and to get much clearer about what students could do with their newly acquired skills and credits, now and in the future.

The framework was rolled out in tandem with a new approach to advising designed to expose students to a wide array of options while providing them with the guardrails needed to stay on track. Crafting the right framework required a structured course sequence across the four years and information about the career opportunities available with those credentials. This became a

key component of reinforcing the pathways objectives, providing key metrics by which staff, students, and families could measure progress over time. But flexibility in the framework remained crucial to ensuring that students could continue moving through pathways even when they encountered obstacles in the long term.

Designing for Both Structure and Flexibility

The C-Town team's decision to create a framework that would provide clear guidelines while remaining adaptable was shaped by observations during the early stages of implementation that a one-size-fits-all approach did not work for students and did not equip advising staff with the tools and knowledge to support all students.

There was also a need for complementary advising approaches that could anticipate students' needs and preferences and help them transition to taking dual enrollment courses at BHCC in grades 11 and 12. Prior to creating the first pathways framework for information technology (IT), determining whether a dual enrollment course had any prerequisites was the primary driver of course selection. While focusing on courses without prerequisites enabled advisors to keep students engaged in dual enrollment experiences, especially if they were not interested in taking another industry-specific course, it did not help students (nor advisors) place their courses in the context of a credential and transferable credit.

Additionally, while C-Town Pathways initially focused on IT and Business, the program was not designed to lead students to a specific program of study and sub-concentration within those fields, like cybersecurity or accounting. This exacerbated the challenge of directing students into dual enrollment courses that would be most relevant in the long term. One particularly critical adjustment to advising support was therefore focused on helping students make sense of the credits they were earning, honing in on the available degrees and programs of study at BHCC and better understanding the specific jobs for which their pathway experience was preparing them. This approach enabled students to strategically accumulate credits while still exploring interests and equipped advising staff with tools to promote more intentional course selection practices.

Finding the Right Pathways Structure

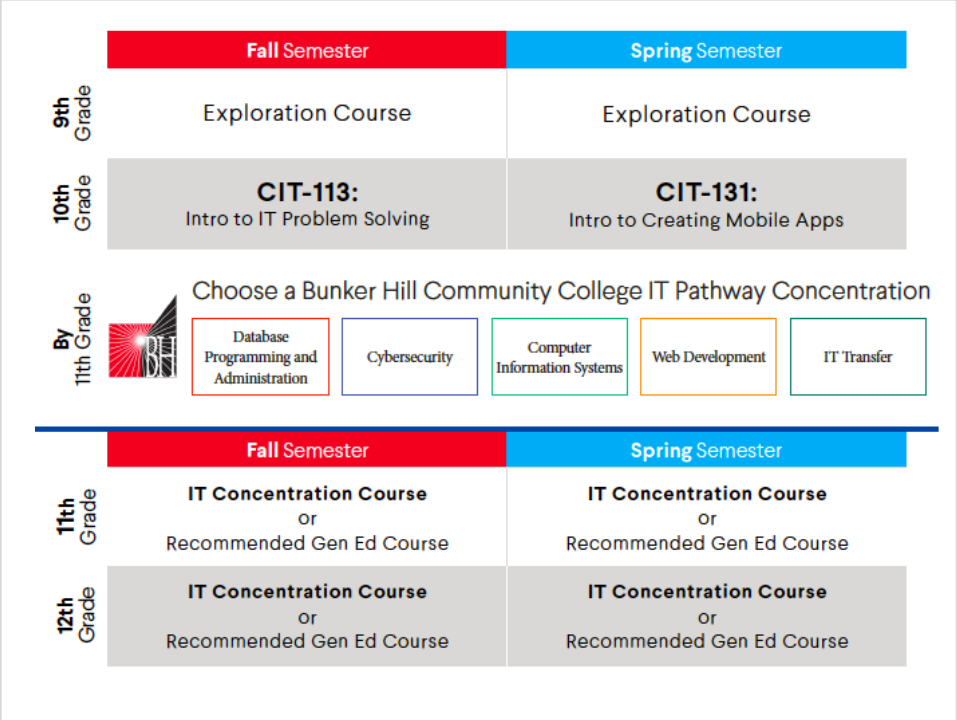
To develop course sequences that balanced structure and flexibility, the C-Town team and JFF used a program of study mapping approach that identifies dual enrollment courses that are both accessible to students and broadly useful in a certain course of study. This method is designed to provide students with the maximum possible number of options at each point along the pathway

while also ensuring that pathways support academic attainment and the skills development needed to successfully launch a career.

During the initial implementation of the pathways, the sequence of courses laid out a prescribed path for students and assumed students would take at least two dual enrollment courses per semester at BHCC, including general education courses like English and math. Staff soon realized that while a prescribed sequence of courses was straightforward in theory, in practice, it felt too restrictive for students and led to attrition.

As staff redesigned course sequences, the C-Town team began to consider how it might shift the balance between flexibility and structure by grade level. For the first two years of the pathway, it made sense for students to move through a prescribed set of courses together as part of the same cohort. Beginning in grade 9, students would take a "pathway exploration" elective each semester, followed by a two-course dual enrollment sequence in grade 10, Intro to IT Problem Solving and Intro to Creating Mobile Apps, so that students would not be overwhelmed by the transition into high school and college courses simultaneously. This structure engaged the entire cohort while equipping students with marketable skills they could use immediately in work-based learning experiences.

Once students reached grades 11 and 12, CHS staff found that they had an interest in exploring a wider range of courses, which might extend beyond the industry focus of a given pathway. As a result, staff reconfigured the pathways framework to focus on the transition between grades 10 and 11, at which point students would have the option to branch out and explore a range of concentrations within the IT pathway.



Identifying the Right Course Sequence

The first dual enrollment course in the IT pathway was selected to ensure a balance of targeted skill development aligned to the industry focus of the pathway and the development of competencies applicable across a range of courses and fields. C-Town staff, JFF, and BHCC started with the IT pathway framework, since it was the first and most established pathway. The team identified Intro to IT Problem Solving as an ideal dual enrollment course to begin the pathway because it had no prerequisites and it satisfied requirements for nearly all IT degree programs, as well as other degree programs. The project-based nature of the coursework also helped students stay on track with the pacing of the course and increased students' excitement about the pathway through topics like data ethics and how to build your own computer. Intro to IT Problem Solving at BHCC also serves as a "gatekeeper" to numerous other courses within the IT department.

For the second course in the sequence, both CHS and BHCC staff agreed on an introductory Mobile App Design course that also didn't require any prerequisites, though it did not have the same credit applicability to as many IT degree programs at BHCC as Intro to IT Problem Solving. Unless students were interested in completing the Mobile App Design certificate program, the course would likely satisfy only an elective requirement for students who pursued an associate's degree program in IT at BHCC or planned to transfer to a four-year public institution in Massachusetts. At the same time, feedback from numerous students in the first cohort affirmed that this course spoke to their interests and got them excited about taking more

tech courses. Therefore, while Mobile App Design has not functioned to satisfy key requirements, it has played a key role in student engagement and retention in the pathway.

Mapping the Pathways

The selection criteria for the first two years of courses in the pathway focused on increasing engagement, improving foundational skill development, and expanding students' options and eligibility for future IT courses. The first two years also prioritized cohort cohesion and scaffolded supports by prescribing a set of required courses for students to take on their high school campus. Knowing that the C-Town team wanted students to explore a broader range of subjects and dual enrollment courses at BHCC during the second two years of the pathway, a different process and set of criteria were needed to identify a roadmap that was more flexible but still included clear navigational markers for students to follow.

The process included three key phases intended to support the development of a framework aligned to available postsecondary degrees and credentials and to the regional labor market: taking stock of BHCC offerings, analyzing labor market data, and matching courses to career opportunities.

1) Take stock of all IT degree programs and certificates available at BHCC

Beginning with this analysis allowed JFF to make explicit connections to the specific degrees that students could earn. BHCC offers 10 associate degree programs and 14 certificate programs in IT, so this stock-taking exercise enabled JFF to better understand the differences and similarities in requirements across each concentration, identify prerequisite courses that opened the door to higher level courses, and align course offerings to the labor market data in the next step. The result of this initial analysis was a concise but intentional list of dual enrollment course options that would be more manageable for CHS students and staff in the advising process.

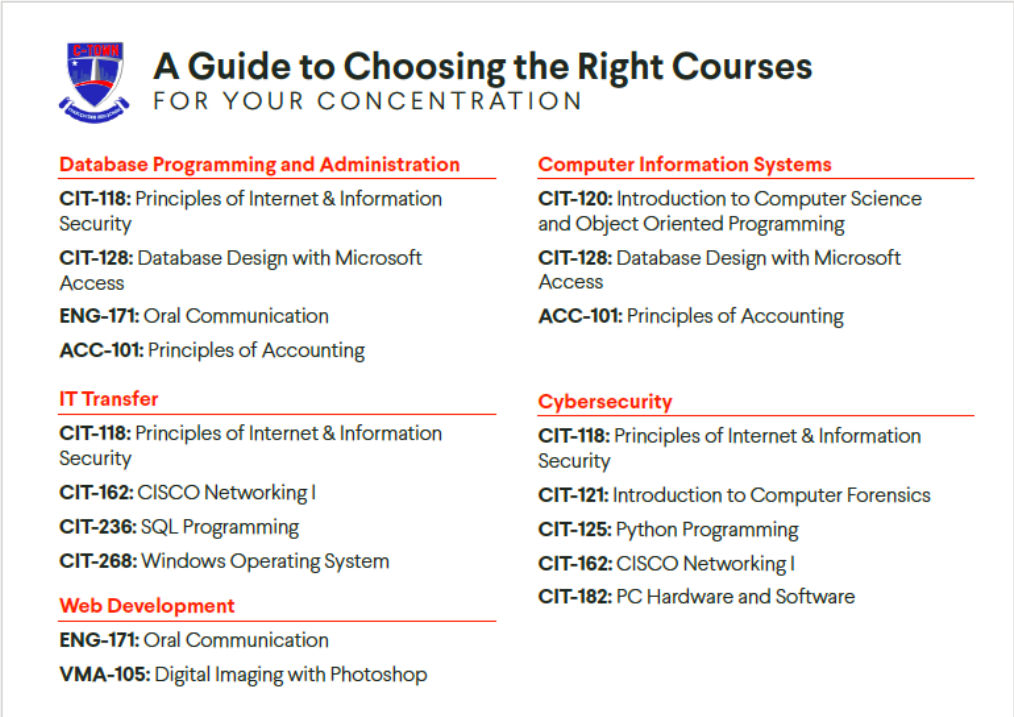
2) Analyze regional labor market data to help prioritize programs

This step allowed JFF to establish a set of potential long-term career objectives that could be presented to C-Town Pathways students. Labor market information helped inform decisions about the best concentrations to prioritize when cross-referenced with the skills taught in priority degree programs and those required for potential promising careers. JFF paid special attention to the specific competencies and industry-recognized programs that were presented to students in the required courses. For instance, the labor market analysis made it clear that Cisco certifications and programming languages like Python were highly marketable skills and would allow students to enhance their resumes while still in high school, so they were factored into our selection of degree programs. We also consulted with a cross-institutional group of CHS staff,

course instructors, and BHCC deans to ensure students had a clear path to employment and/or further postsecondary education following high school graduation.

3) Identify priority courses within each priority degree program

After identifying the priority concentrations, the next step was to identify a select group of priority courses within each concentration. JFF looked at each program of study and used criteria such as course prerequisites, instruction in core skills or industry-recognized programs like SQL, and whether they satisfied elective or general education requirements. JFF also sought feedback from BHCC instructors to gain more qualitative information on student performance and engagement to determine which courses would be most suitable for high school audiences.



A Guide to Choosing the Right Courses
FOR YOUR CONCENTRATION

Database Programming and Administration

CIT-118: Principles of Internet & Information Security
CIT-128: Database Design with Microsoft Access
ENG-171: Oral Communication
ACC-101: Principles of Accounting

Computer Information Systems

CIT-120: Introduction to Computer Science and Object Oriented Programming
CIT-128: Database Design with Microsoft Access
ACC-101: Principles of Accounting

IT Transfer

CIT-118: Principles of Internet & Information Security
CIT-162: CISCO Networking I
CIT-236: SQL Programming
CIT-268: Windows Operating System

Web Development

ENG-171: Oral Communication
VMA-105: Digital Imaging with Photoshop

Cybersecurity

CIT-118: Principles of Internet & Information Security
CIT-121: Introduction to Computer Forensics
CIT-125: Python Programming
CIT-162: CISCO Networking I
CIT-182: PC Hardware and Software

At the end of this process, JFF was able to identify five key IT concentrations from the list of 10 programs and 14 certificates that had value in the local labor market and aligned to jobs that paid above a living wage. The intention behind offering these concentrations was to address students' interest in exploring within the IT field while also providing some guardrails to ensure students would make progress toward a valuable degree and develop in-demand skills. Different from declaring a major, students are not formally bound to a particular concentration when they transition from grade 10 to 11, but the framework does provide a structure within which students' combined academic and career objectives can inform their course selections once they move to BHCC's campus.

"The most fundamental thing is understanding what exactly students are getting out of the experience at every stage. What does it mean to earn three college credits? There are some obvious mechanics, but it's important that we understand what we're attempting to do in terms of skill building." *—CHS staff member*

The pathways framework developed through this process balances the need to expand students' horizons and options and the need to provide clear parameters to keep students from being overwhelmed by new information. In addition to highlighting concentrations that have value in the local labor market and pay good wages, the pathways helps staff and students select courses and understand how they might be applied as they moved through the pathway. As one staff member emphasized, "The most fundamental thing is understanding what exactly students are getting out of the experience at every stage. What does it mean to earn three college credits? There are some obvious mechanics, but it's important that we understand what we're attempting to do in terms of skill building."

Making Adjustments to Student Advising

This multistep process and development of the pathways framework not only helped identify which concentrations would serve as the cornerstone of the IT Pathway but also helped advisors feel more confident about encouraging students to explore different parts of the IT industry, navigate the plethora of course options at BHCC, and gain specific skills that would be useful in their future careers. Consequently, C-Town had to reorient its advising strategy toward supporting students in making their own choices while also providing guardrails to help ensure that students were being supported by the structure of the pathways.

Unsure what concentration you want to choose?

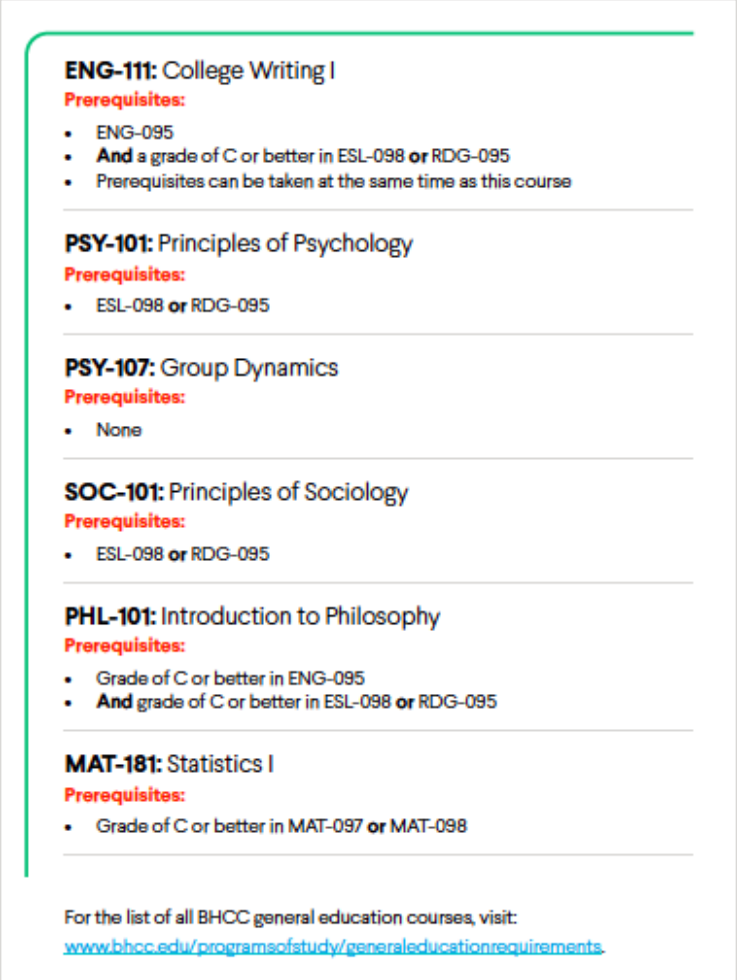
Start by exploring some of these courses that apply to multiple concentrations:

CIT-268: Windows Operating System	**Applies to:** • Database Programming and Administration • Cybersecurity	• Web Development • IT Transfer
CIT-216: Visual Basic	**Applies to:** • Database Programming and Administration	• Computer Information Systems • IT Transfer
CIT-236: SQL Programming	**Applies to:** • Database Programming and Administration	• Web Development • IT Transfer
CIT-162: CISCO Networking I	**Applies to:** • Database Programming and Administration	• Cybersecurity • IT Transfer

In the initial implementation phase, the advising team did not have a firm grasp on which courses were best for students and it did not take a systematic approach to helping students keep track of dual enrollment credits. A common scenario advisors faced was working with students who were interested in continuing in the IT pathway but were not prepared to decide what concentration to pursue. This situation highlighted the need for an easy guide that would point students to highly versatile courses across all concentrations, similar to the introductory dual enrollment course they took as grade 10 (*see "Unsure what concentration you want to choose?" image on page 7*).

After implementing the pathways framework, advisors needed to communicate to students the role of general education courses in completing an associate's degree as well as within a career-focused pathway. After two years of IT or Business dual enrollment courses, it was common for students to say they wanted to take a break from career-oriented material to explore other subjects, like French and sociology. While advisors wanted to encourage students to take advantage of these courses, they observed that students became detached from their pathway's industry focus, making it more difficult to complete the full range of requirements in their concentration.

Rather than create an exhaustive list of general education courses, many of which had multiple prerequisites or rigorous lab components, JFF opted to create an abridged menu of courses that had few prerequisites and were developmentally appropriate for high school students, according to BHCC staff (*see image on the right*). This helped advisors explain the role of general education courses in completing an associate's degree and demonstrate to students that they were still "in" the tech pathway, even when they took general education courses and other electives.



ENG-111: College Writing I
Prerequisites:
- ENG-095
- **And** a grade of C or better in ESL-098 **or** RDG-095
- Prerequisites can be taken at the same time as this course

PSY-101: Principles of Psychology
Prerequisites:
- ESL-098 **or** RDG-095

PSY-107: Group Dynamics
Prerequisites:
- None

SOC-101: Principles of Sociology
Prerequisites:
- ESL-098 **or** RDG-095

PHL-101: Introduction to Philosophy
Prerequisites:
- Grade of C or better in ENG-095
- **And** grade of C or better in ESL-098 **or** RDG-095

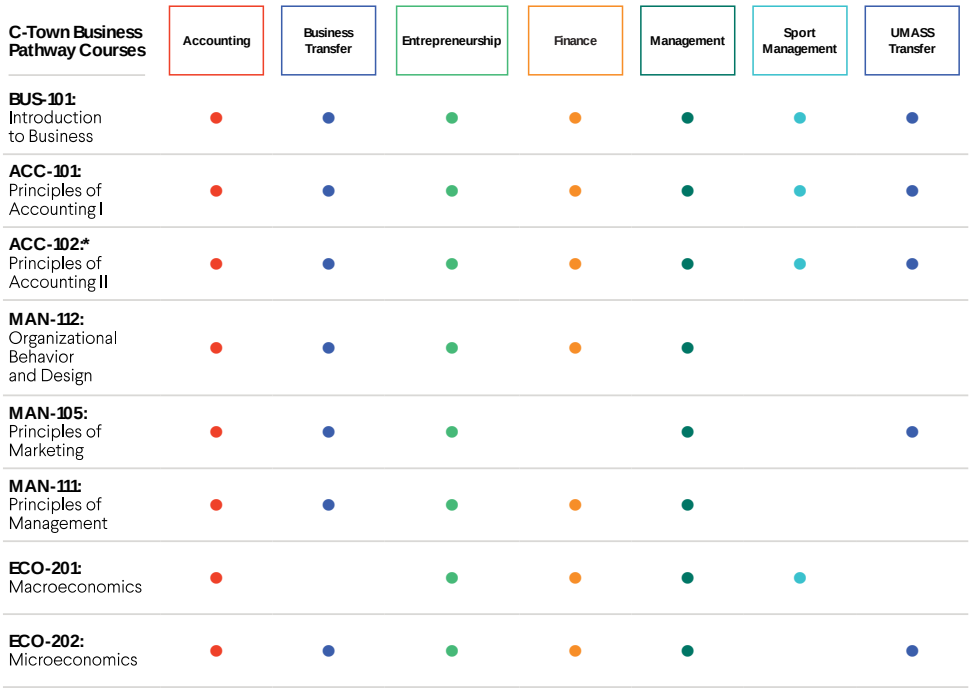
MAT-181: Statistics I
Prerequisites:
- Grade of C or better in MAT-097 **or** MAT-098

For the list of all BHCC general education courses, visit:
www.bhcc.edu/programsofstudy/generaleducationrequirements

Creating a Template for Additional Pathways Frameworks

The experience of mapping courses for the IT pathway framework helped create a template for subsequent pathway frameworks in business and healthcare, which follow the same overall structure: prescribed courses during the first two years and then a wider range of options during the second two years. While the template was helpful in standardizing the mapping process, it was clear that the frameworks would nonetheless need to be customized to reflect key characteristics of each industry and align with specific departmental and degree requirements.

In contrast with the IT concentrations that had unique sets of core courses, the mapping process for the Business Pathway revealed that the majority of the priority Business concentrations at BHCC shared one set of eight required core courses. Since C-Town Pathways students typically have room in their schedule to take only one or two dual enrollment courses per semester, they tend to complete a total of five to eight college courses by the time they graduate. Consequently, it made more sense for the Business pathway framework to include as many of these eight core courses as possible while still providing the opportunity for students to identify specialized concentrations. Therefore, JFF determined that a matrix demonstrating which courses had the greatest applicability across the six priority concentrations was the best way to graphically represent the Business pathway framework (*see image below*).

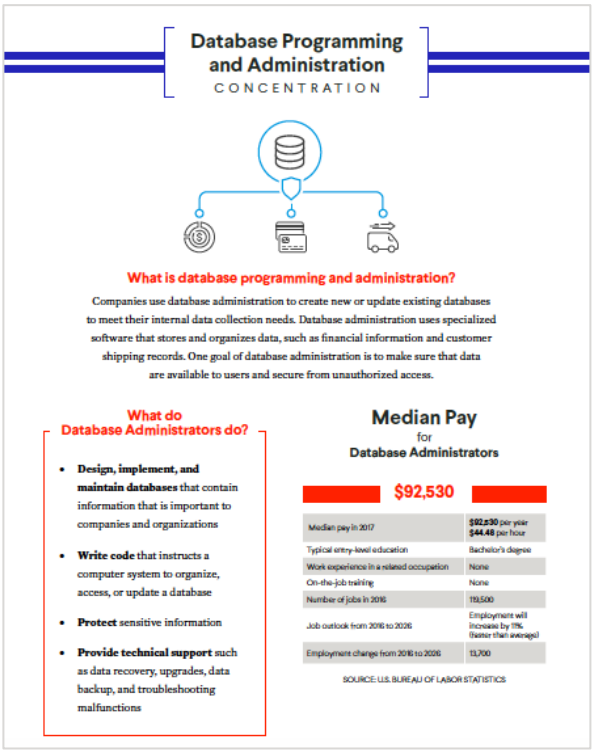


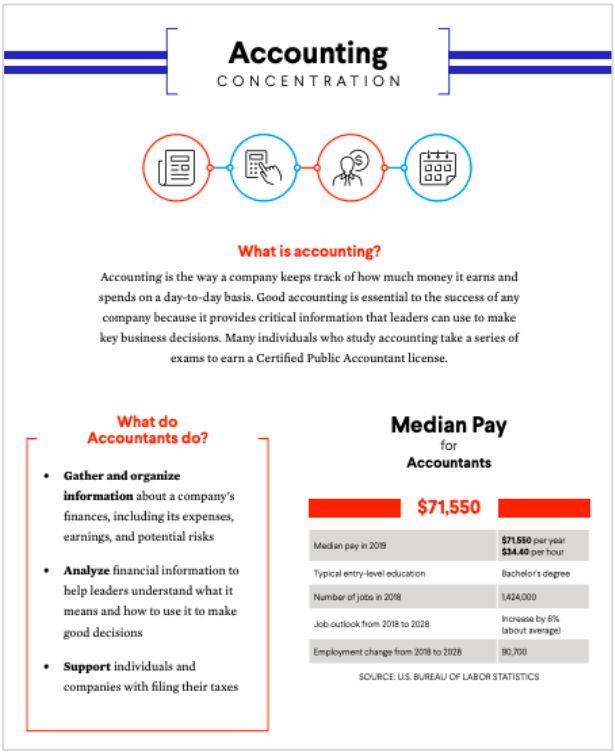
C-Town Business Pathway Courses	Accounting	Business Transfer	Entrepreneurship	Finance	Management	Sport Management	UMASS Transfer
BUS-101: Introduction to Business	●	●	●	●	●	●	●
ACC-101: Principles of Accounting I	●	●	●	●	●	●	●
ACC-102:* Principles of Accounting II	●	●	●	●	●	●	●
MAN-112: Organizational Behavior and Design	●	●	●	●	●		
MAN-105: Principles of Marketing	●	●	●		●		●
MAN-111: Principles of Management	●	●	●	●	●		
ECO-201: Macroeconomics	●		●	●	●	●	
ECO-202: Microeconomics	●	●	●	●	●		●

Prerequisites:

- ESL-098/99 **or** RDG-095 **and** ENG-090 **or** placement
- *ACC-101 is a pre-req for ACC-102

In addition to striking a balance between structure and flexibility within course sequencing, JFF sought to provide concrete and accessible information about careers that would help students apply their early college experiences and encourage them to make choices based on their individual interests. Advisors helped identify the final missing element: easily digestible career profiles that explain key advantages and responsibilities in relatable terms (*see images below*). This approach allowed students to quickly review whether a career fit their interests and objectives, helping the students and their advisors simplify the process of selecting a concentration and dual enrollment courses.



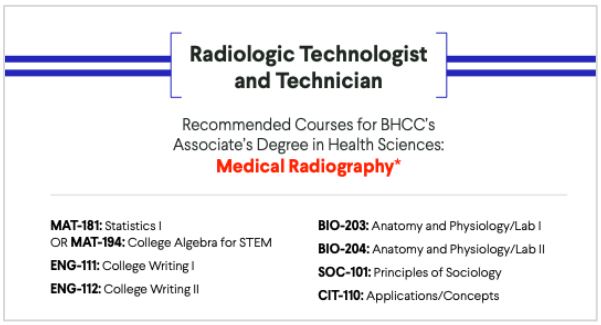


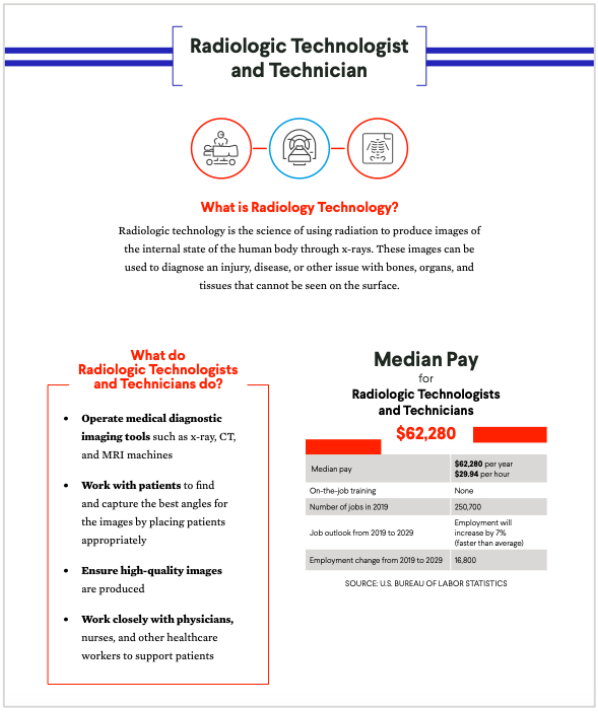
Rather than presenting dense labor market data, these snapshots are designed to answer fundamental questions, such as "What do database programmers do?" Answers to such practical questions are not always apparent on college websites or provided by high school advisors or teachers. As one member of the pathways team said, "Simple resources that can expand students' exposure and knowledge of options in the labor market are so important." In addition to high-level information about potential careers, the snapshots also introduce students to the terminology of job searches and provide information on projected growth of these careers and entry-level educational requirements.

"Simple resources that can expand students' exposure and knowledge of options in the labor market are so important."
—C-Town Pathways staff member

For the Health Pathway, the C-Town team and JFF recognized that it would be difficult for a single pathway framework to accurately reflect the concentrations and careers in this field, since the healthcare sector incorporates a much wider range of educational backgrounds and experiences than in IT or business. Nonetheless, it was important to illustrate how different credentials provide numerous entry points into the industry.

JFF and C-Town thus decided to provide students with high-level snapshots of potential careers in health care that they could explore through dual enrollment courses, depending on their individual educational goals and need to enter the workforce (*see images below*).





Beyond this initial introduction, mapping the pathway steps demonstrated that several healthcare programs of study offered at BHCC prepared students to directly enter the workforce following the completion of an associate's degree or certificate. Consequently, it made sense to include a separate graphic that explicitly highlighted the multilevel connection between courses, degrees, and different occupations.

High School Diploma	Certificate or Associate's Degree	Bachelor's Degree	Master's or Doctoral Degree
***Community Health Workers** Median Wage: $46,910	***Radiologic Technicians and Technologists** Median Wage: $63,120	***Registered Nurses Median Wage:** $73,300	***Physician Assistants** Median Wage: $112,260
	Medical Records and Health Information Technicians Median Wage: $42,630	**Health Education Specialists** Median Wage: $46,910	***Psychiatrists** Median Wage: $220,430
	Surgical Technologist Median Wage: $48,300	**Medical Health and Services Managers** Median Wage: $100,980	**Social Workers** Median Wage: $50,470

Looking ahead, C-Town advisors are planning to use companion resources to these pathway maps (such as editable worksheets) for students to create four-year plans that serve as living documents that can be updated as they progress through the pathway. These tools can help students strategically plan for each semester and connect long-term conversations about potential career exploration and work-based learning activities with short-term decisions about dual enrollment courses.

Conclusion

During its first three years, C-Town Pathways more than doubled in size, solidified a dedicated team, and in partnership with JFF, formalized a pathways framework that accounts for variability among students' individual early college experiences. Creating the first C-Town pathway framework for IT encouraged CHS staff to reflect on the first few years of early college pathways, taking stock of what was going well, what had changed from the original concept, and how they hoped the pathway would evolve going forward. The development of the IT pathway

framework also standardized a process for mapping a program of study and provided a template for Business and Health Pathways.

Slight differences in each framework reflect the unique characteristics of that industry, but they all follow a prescribed set of courses during the first two years and share the same targeted menu of general education courses. By creating a more structured experience for students, C-Town Pathways was able to identify areas where more students could take a more flexible approach and encourage more individualized early college journeys. These frameworks are just one of the tools that early college teams can use to help students satisfy their curiosity and align their early college experience to their unique interests, while staying connected to a community of support and a shared understanding of the overall goals among their cohort.