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**2020-2021  
IT Tech Talent Pipeline Mapping Narrative  
United Way of Southwest Virginia**

**Survey Content**

The Youth Success staff at United Way of Southwest Virginia worked to gather information from 53 middle schools and 44 high schools/technical career schools, five community colleges, UVA Wise (and other postsecondary universities/colleges) and numerous IT companies and companies that hire IT professionals. Surveys were conducted from November to April with in-person conversations in order to gather details from participants. The IT Tech talent pathways spreadsheet shows middle school IT/STEM/STEAM engagement to provide awareness of information technology activities. It includes the IT-based dual enrollment courses offered at each high school during the 2020-2021 school year with additional dual enrollment courses one could count towards a degree (with all requirements fulfilled successfully). There is a list of opportunities to expand on IT coursework during the high school years. Community College IT degrees are displayed with a list of employers who specified that they will hire entry-level AAS and AA&S degree students along with examples of job titles, credentials preferred, and estimated entry salary ranges for southwest Virginia. UVA-Wise IT degrees are listed with employers who specified that they will hire entry-level BS degree students along with job titles, credentials preferred, and estimated entry salary ranges for Southwest Virginia. Other four-year colleges/universities that offer IT programs in Southwest Virginia are listed (knowing this may not be comprehensive) along with post-secondary schools listed that offer IT training either in-person or online to achieve additional degrees or coursework.

**Facts**

Dual Enrollment course offerings at high school can change yearly based on qualified faculty to teach the courses.

Students should determine a career pathway by 10th grade if not sooner in order to choose high school classes and/or technical classes that will provide them with training toward their selected career. Finding a club or organization during high school can also connect students to beneficial career exposure and investigation. During high school, students should seek as many work-based learning opportunities as they can (internships, job shadowing, tours, etc.) to provide additional career exploration. Choosing dual enrollment, AP classes, and or Governor's school during high school to prepare for a higher education program will save both money and time for students. Math and science are foundational to IT careers. Depending on the IT pathway that a student chooses, there are a variety of courses in high school that could assist in preparing students for their careers. Students should look at job requirements for their chosen field/pathway and take classes that will supplement their IT degree. Students interested in IT with a specific IT company should take any coursework in networking, programming, software applications, database development, CISCO, Web programming/design, Microsoft, etc. Students interested in IT in healthcare should take entry-level healthcare terminology or introductory healthcare classes. Students interested in IT in banking should take classes in accounting or finance. Students interested in the IT field in manufacturing should take classes in electrical, mechanical and/or pre-engineering.

All high schools in United Way of Southwest Virginia’s footprint have access to Elite Learning and Linwood Holton Governor’s school (excluding feeder schools to NRCC) online courses. To find a listing of what they offer, see below:

[www.svetn.org](http://www.svetn.org/) (Elite)

The Southwest Virginia Education and Training Network (SVETN) is a 501 (c) (3) not-for-profit corporation governed by educators. The SVETN was established in response to a need to increase curriculum offerings in small rural schools throughout Southwest Virginia. In 2004, SVETN launched Elite Learning, a program of asynchronous online courses in its sixteenth year serving the students of Southwest Virginia. Elite is an acronym for Experience Learning Innovation and Teaching Excellence. SVETN serves the educational needs of learners in Bland, Buchanan, Carroll, Dickenson, Grayson, Lee, Russell, Scott, Smyth, Tazewell, Washington, Wise, Wythe, and the cities of Norton, Bristol, and Galax. Most courses offered by Elite Learning are dual enrollment, meaning students receive both high school and college credit for the same coursework. Classes are asynchronous, that is, students may proceed at their own pace, on their own time, within a flexible calendar framework. Thus, the scheduling of in-school work time also is conveniently flexible.

[www.hgs.k12.va.us](http://www.hgs.k12.va.us/) (Linwood Holton)

The Commonwealth of Virginia's first virtual school. We serve students in seventeen school divisions and thirty-six high schools throughout the Commonwealth. The A. Linwood Holton Governor's School offers dual enrollment courses to academically talented students in Southwest Virginia who qualify to participate.

**Best Practices Identified**

Scaled activities for IT awareness include the Careers EXPO with numerous careers in and/or technology focused, Educator Tours focused on IT and technical skills needed in entry level jobs, and the use of Major Clarity in exploration of careers. Other scalable activities were in partnership with Code VA and the Southwest Virginia Higher Education Center. They included training for students and teacher with attendance of 500 from October 2020 to May of 2021.

Some best practices from school to school for dual enrollment are to offer the coursework (as schedules allow) to other schools via online platforms.The biggest hurdle in offering additional IT dual enrollment courses is the credentials needed for high school teachers. High schools can share the qualified instructor of various dual enrollment courses. They should offer as many content classes for dual enrollment as possible so that students can truly explore their intended career field early. Otherwise, students should take as many core dual enrollment courses as possible to prepare to go to post-secondary education for their specified IT area. Most IT careers need a degree for entry level careers, so students are collegebound. Some students who are collegebound do not attend the Technical Schools and are therefore limited in the IT coursework programs at their high schools. Schools should consider ways to offer these courses to more than CTE identified students.

Strong IT pathways are when middle schools engage students in numerous STEM/STEAM etc. opportunities to include activities and clubs. These awareness activities allow middle school students to really explore their interests and could help them make early career decisions. Another factor to look at is the number of dual enrollment, AP, and other training specifically in IT during the high school years, including clubs or organizations in this focus area also. If a student chooses an IT pathway, they should take as many dual enrollment courses that direct them to their focus of IT (healthcare, manufacturing, banking, IT, etc.) An example could be if a student wants to work in the IT healthcare field, they should take as many IT courses as possible along with an introductory medical/science courses during high school. By their senior year, a student should explore thoroughly the requirements of their post-secondary school choice ensuring that they are taking any prerequisite courses at the high school level. Entering postsecondary education with general education or specific IT courses already completed can save money and time for students and allow them to get right to their major coursework faster which helps with retention. Strengthening these IT pipelines will lead to more students identifying IT careers sooner, allowing them to explore the field and find their area of work, and lead to more students obtaining the needed post-secondary education program that gets them to the work world sooner. It could also lead to more students connecting with IT companies in Southwest Virginia soon and exploring work-based learning (WBL) opportunities throughout their education.

**Recommendations for Post-Secondary Education**

Recruiters, career coaches, and/or faculty should actively engage students who have selected high growth career pathways (like IT or Healthcare). Focusing on programs with low enrollment but high growth in their region should be high priority. This data can be pulled by Ignite Coordinators at the high schools using Major Clarity and other resources. This does require students to use their accounts and choose pathways at the various grade levels. This should happen 10th or 11th grade at the latest to ensure knowledge and earlier to engage IT students.

Analysis of dual enrollment courses should be reviewed yearly and determine focus areas based on the above data along with teacher qualifications. There are numerous opportunities for educators to take online and in-person courses to gain the qualifications to teach dual enrollment courses.

**Community College Information**

For transfer programs, a faculty member must have at least a master’s degree in the teaching field or sometimes a master’s degree in a related field with 18 hours in the teaching field. This includes dual enrollment faculty at the high school.

In addition to the admission requirements established for the college entry into an AAS Degree Program required proficiency in high school English and mathematics. Direct enrollment guidelines using either multiple measures or informed placement determines a student’s placement into college-level English and mathematics courses. Prerequisites are listed in the college catalogue for all AAS programs. These can change and should be reviewed annually.

Students should check the mathematics requirements of the four-year college or university in which they plan to transfer. They should also check the humanities/fine arts requirements and the natural science requirements of the four-year college or university in which they plan to transfer to determine the proper courses to be taken at the community college.

The five community colleges listed below serve the footprint of United Way of Southwest Virginia:

*Mountain Empire Community College-MECC*

Serving residents of Lee, Scott, Wise, and Dickenson Counties, and the City of Norton.

*Programs of Study:*

<https://www.mecc.edu/pathways/>

*New River Community College-NRCC*

Serving residents of Pulaski, and the Cities of Giles, Radford. (These are the only localities in the United Way of Southwest VA footprint)

*Programs of Study:*

<https://www.nr.edu/degrees/>

*Southwest Virginia Community College-*SWCC

Serving primarily the residents of the counties of Buchanan, Dickenson (partial), Russell and Tazewell.

*Programs of Study:*

<https://sw.edu/programs-of-study-paths/>

*Virginia Highlands Community College-VHCC*

Serving the residents of Bristol Virginia, Washington County and the Western Part of Smyth County.

*Programs of Study:*

<https://www.vhcc.edu/current-students/program-pathways>

*Wytheville Community College-WCC*

Serving the citizens of Bland, Carroll, Grayson, Smyth, and Wythe counties, the city of Galax, the citizens of Virginia, and beyond.

*Programs of Study:*

<https://www.wcc.vccs.edu/programs#college-transfer>

**AAS Degree vs AA&S Degree**

Associate of Applied Science (AAS) degree is a degree for any student who is planning to become part of the workforce immediately after attending school. Associate of Art & Science (AA&S) degree is a two-year degree that’s designed to transfer to a four-year school.

**Career Study Certificates**

Numerous Career Study Certificates are available.Career Study Certificates (CSC) are one to two semesters and could be advantageous for students already in the IT field who have degrees but need additional training. These are approved by the college locally and could be designed in response to a local business need. The CSC is designed to enhance job skills or help change careers. They are not less than 9 nor more than 29 credit hours and are not required to include general education.

Below is a document that lists the Transfer Virginia Uniform Certificate of General Studies (UCGS) roster of classes that was released just this week from SCHEV. This is work that has been completed by all VCCS schools as well as the public 4-year schools in Virginia. It lists the general education classes that are required to be accepted for transfer from a VCCS school to the public 4-year school. It does not include classes considered to be in the “major” outside of these core classes.

**Business Input**

List of Companies either surveyed or researched:

1901 Group

AEP

Amazon

Ballad Health

Boeing

Booz Allen Hamilton

Capital One

Celanese

CGI

Compu Management Corp

Computer Solutions of Marion

Crutchfield

E-Health Technologies

Eastman Credit Union

Eastman Chemical Company

Igotechnology, Inc.

Innovative Computer Services Inc

KVAT

Lochead Martin

New Peoples Bank

Northrop Grumman

NTT Data Services Federal

Public School Systems

SAIC

Splunk

Sunset Digital Holding

Sykes

Techna Venture Inc.

TEDS CBM Technologies

Teleperformance

True Point Bank

Verizon

Virginia Community College System

Wize Solutions

Credentials and or any experience preferred or required are listed on the IT Pipeline Mapping Excel spreadsheet and include some entry level titles and approximate salaries at both the associates and bachelor’s degree levels. Workplace skills noted and essential for IT professionals identified by the businesses surveyed are communication (both oral and written), problem solving (inquisitive and translational skills), customer service (detail oriented and professorial), good attendance (punctual and reliable), and the ability to learn and acquire new skills.

**Back-Up Statistics and Information supporting the Draft Implementation Plan**

The Faculty Role in Transfer-

When faculty from the institution to which students transfer engage with the students early on, it increases the odds of a transfer taking place.

<https://www.insidehighered.com/admissions/article/2020/09/21/faculty-play-key-role-community-college-transfer>

# A Decade Undone: 2021 Update-The number of teens and young adults disconnected from both work and school in the United States fell for the ninth year in a row, from a recession-fueled high of 14.7 percent in 2010 to 10.7 percent in 2019. In May 2020 as many as nine million young people were out of school and out of work, more than twice as many as in 2019.

<http://measureofamerica.org/youth-disconnection-2021/>

Kids Data by Population Reference Bureau

<https://www.kidsdata.org/research/87/disconnected-youth#none/>

Teenagers Have Stopped Getting Summer Jobs—Why

<https://www.theatlantic.com/business/archive/2017/06/disappearance-of-the-summer-job/529824/>

Why so few teenagers have jobs anymore

<https://www.cnbc.com/2019/10/06/why-so-few-teenagers-have-jobs-anymore.html>

Teen labor force participation before and after the Great Recession and beyond

<https://www.bls.gov/opub/mlr/2017/article/teen-labor-force-participation-before-and-after-the-great-recession.htm>

Creating Strong Building Blocks for Every Student-How Middle Schools Can Lay the Foundation for Rigorous High School Pathways

<https://www.americanprogress.org/issues/education-k-12/reports/2020/08/05/488493/creating-strong-building-blocks-every-student/>

Extracurricular Participation and Student Engagement

<https://nces.ed.gov/pubs95/web/95741.asp>

During the pandemic, teen summer employment hit its lowest point since the Great Recession

<https://www.pewresearch.org/fact-tank/2019/06/27/teen-summer-jobs-in-us/>

School-aged kids need more exposure to the world of work:

<https://theconversation.com/why-school-kids-need-more-exposure-to-the-world-of-work-100590>

Exposure to Engineering doubles teens’ career interest

<https://www.intc.com/news-events/press-releases/detail/615/exposure-to-engineering-doubles-teens-career-interest>

# Early Career Exposure: Career Exposure in Middle School = Future Career Success

<https://readtolead.org/career-exposure-in-middle-school-future-career-success/>

Early Exposure to STEM is Key to Driving Continued Interest

<https://onevoice.pta.org/early-exposure-to-stem-is-key-to-driving-continued-interest/>

*Approved Uniform Certificate of General Studies Course Roster*

(August 31, 2021)

The Uniform Certificate of General Studies (UCGS) is a two-year college program in which all courses are transferable and satisfy lower-division general education requirements at any Virginia public institution of higher education. The Passport is component of the UCGS and is therefore a subset of courses in the UCGS. The UCGS consists of seven course blocks. To satisfy the UCGS students are required to complete the appropriate number of courses in each block as described below. Student course selection should be carefully considered since the UCGS program is not designed to capture the complexities of individual programs of study at the four-year institutions. Students should be advised to take the UCGS course that best suits their intended program of study at the four-year institution. The UCGS Course Roster for the Virginia Community College System (VCCS) is below. The UCGS Course Roster for Richard Bland College is under development.

**VCCS Uniform Certificate of General Studies Course Roster**

**Students are required to select courses from each block as prescribed below.**

1. Block I (Written Communication) – Select ENG 111 plus one other course.

* ENG 111 – College Composition I
* ENG 112 – College Composition II
* ENG 113 – Technical-Professional Writing

1. Block II (Humanities /Art/Literature) – Select two courses chosen from different categories (please note that the two courses cannot be from the same category).
2. Art
   * ART 100 – Art Appreciation
   * ART 101 (201) – History of Art: Prehistoric to Gothic
   * ART 102 (202) – History of Art: Renaissance to Modern
   * CST 130 – Introduction to Theatre
   * CST 151 – Film Appreciation I
   * MUS 121 – Music in Society
   * MUS 221 – History of Western Music Prior to 1750
   * MUS 222 – History of Western Music 1750 to Present
   * MUS 226 – World Music
3. Humanities
   * HUM 201 – Early Humanities
   * HUM 202 – Modern Humanities
   * HUM 210 – Introduction to Women and Gender Studies
   * HUM 216 – Introduction to Non-Western Cultures
   * HUM 220 – Introduction to African American Studies
   * HUM 256 – Comparative Mythology
   * HUM 259 – The Greek and Roman Tradition
   * PHI 100 – Introduction to Philosophy
   * PHI 111 – Logic I
   * PHI 220 – Ethics
   * REL 100 – Introduction to the Study of Religion
   * REL 230 – Religions of the World
   * REL 237 – Eastern Religions
   * REL 240 – Religions in America
4. Literature

* ENG 225 – Reading Literature: Culture and Ideas
* ENG 245 – British Literature
* ENG 246 – American Literature
* ENG 250 – Children’s Literature
* ENG 255 – World Literature
* ENG 258 – African American Literature
* ENG 275 – Women in Literature

1. Block III (Social and Behavioral Sciences) – Select one course.

* ECO 150 – Economic Essentials: Theory and Application
* ECO 201 – Principles of Macroeconomics
* ECO 202 – Principles of Microeconomics
* GEO 210 – People and the Land: Intro to Cultural Geography
* GEO 220 – World Regional Geography
* PLS 135 (211) – U.S. Government and Politics
* PLS 140 – Introduction to Comparative Politics
* PLS 241 – Introduction to International Relations I
* PSY 200 – Principles of Psychology
* SOC 200 – Introduction to Sociology
* SOC 211 – Cultural Anthropology
* SOC 268 – Social Problems

1. Block IV (Natural Sciences) – Select one course.

* BIO 101 – General Biology I
* BIO 102 – General Biology II
* BIO 106 – Life Science
* CHM 101 – Introductory Chemistry I
* CHM 111 – General Chemistry I
* CHM 112 – General Chemistry II
* ENV 121 – General Environmental Science I
* ENV 122 - General Environmental Science II
* GOL 105 – Physical Geology
* GOL 106 – Historical Geology
* GOL 110 – Earth Systems: An Environmental Geology Perspective
* PHY 100 – Elements of Physics
* PHY 201 – General College Physics I (Algebra Based)
* PHY 202 – General College Physics II (Algebra Based)
* PHY 241 – University Physics I (Calculus Based)
* PHY 242 – University Physics II (Calculus Based)

1. Block V (Mathematics) – Select one course.
2. Quantitative/Statistics Pathway:

* MTH 154 – Quantitative Reasoning
* MTH 155 – Statistical Reasoning
* MTH 245 – Statistics I

B. Calculus Pathway:

* MTH 161/162 – PreCalculus I/ PreCalculus II
* MTH 167 – PreCalculus with Trigonometry
* MTH 261 – Applied Calculus I
* MTH 263 – Calculus I
* MTH 264 – Calculus II

1. Block VI (History) – Select one course.

* HIS 101 – Western Civilizations Pre-1600 CE
* HIS 102 – Western Civilizations Post-1600 CE
* HIS 111 – World Civilizations Pre-1500 CE
* HIS 112 –World Civilizations Post-1500 CE
* HIS 121 – United States History to 1877
* HIS 122 – United States History Since 1865

1. Block VII (Specialized GE Requirements) – Select two courses.

NOTE: For Block VII, Student may complete courses from Blocks I-VI above or any additional course below. Students should align their Block VII course selection with their intended transfer destination’s specific general education or programmatic requirements.

* ASL 101 – American Sign Language I
* ASL 102 – American Sign Language II
* ASL 201 – American Sign Language III
* ASL 202 – American Sign Language IV
* ART 121 – Foundations of Drawing
* ART 131 – Two Dimensional Design
* ART 132 – Three Dimensional Design
* ART 223 – Life Drawing
* CSC 110 – Principles of Computer Science
* CST 100 – Principles of Public Speaking
* CST 110 – Introduction to Communication
* FL 101 – Foreign Language I
* FL 102 – Foreign Language II
* FL 201 – Foreign Language III
* FL 202 – Foreign Language IV
* ITE 152 – Introduction to Digital and Information Literacy and Computer Applications
* MUS 101 – Fundamentals of Music

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