Mountain Gateway Technical Education Center Lab School

Official MGCC Representative: Dr. John Rainone, President

Grant POC: Dr. Ben Worth, Vice President, Academic Affairs

Lead POC / MG-TEC Planning Director: Alexander Morrow

Partnered High Schools

- Alleghany High School (Covington)

POC: Ms. Kim Halterman

- Bath County High School (Hot Springs)

POC: Dr. Rick Bolling, Ed.D.

- Rockbridge County High School (Lexington)

POC: Dr. Phillip Thompson, Ed.D.

- Parry McCluer High School (Buena Vista)

POC: Dr. Tony Francis, Ed.D.

- James River High School (Buchanan)

POC: Dr. Mervin Daugherty, Ed.D.

Industry Partners

- Virginia Military Institute (VMI)
- Amazon Web Services (Industry Leader in Cloud Computing)
- Cengage Group (Educational Content Provider)
- CompTIA (Offers all Lab School Certifications)
- Aurora Security LLC (Cybersecurity Company)
- Washington and Lee University
- Carillion Rockbridge Community Hospital

Introducing MG-TEC Laboratory School

The MG-TEC Laboratory School holds immense significance in the contemporary educational landscape, representing a beacon of innovation, collaboration, and academic excellence. Positioned at the intersection of higher education and secondary schooling, MG-TEC is pioneering a transformative approach to learning, blending cutting-edge technology, experiential education, and community engagement.

Innovative Pedagogy:
MG-TEC stands out for its innovative pedagogical approach, embracing the HyFlex teaching model that seamlessly integrates in-person and virtual learning experiences. This adaptive methodology caters to diverse student needs and prepares them for the evolving educational landscape.

Collaborative Partnerships:
MG-TEC strategic partnerships with local and National businesses, higher education institutions, school divisions, and community leaders foster a collaborative ecosystem. These alliances create a dynamic learning environment enriched with diverse perspectives and resources.

Comprehensive Curriculum:
MG-TEC offers a comprehensive curriculum that goes beyond traditional academic boundaries. Programs and courses are meticulously designed to align with industry needs, providing students with practical skills and knowledge relevant to real-world scenarios.

Community Engagement:
MG-TEC actively engages with the local community, fostering partnerships, outreach programs, and collaborative projects. This community-centric approach not only benefits students but also contributes to the broader educational landscape by addressing community needs and aspirations.

Preparation for Future Challenges:
MG-TEC positions students for success in an increasingly interconnected and technological world. By integrating practical skills, critical thinking, and technological literacy into the curriculum, the school equips students to navigate and excel in diverse academic and professional pathways.

The MG-TEC Vision

"Competition breeds excellence"

- Noel DeJesus – The 2 Minute Leadership Drill: A Playbook for Aspiring Leaders

Transformative:

At MG-TEC, we envision a transformative educational experience that transcends traditional boundaries, fostering innovation, empowerment, and holistic development. Rooted in the convergence of technology, experiential learning, and community engagement, our vision is to create a dynamic ecosystem where students are inspired to become lifelong learners. We aspire to nurture a culture where curiosity is sparked, creativity is celebrated, and every individual is equipped with the skills and mindset needed to navigate the complexities of the modern world.

Collaborative:

In this vision, MG-TEC serves as a hub of collaboration, forming strategic partnerships with higher education institutions, school divisions, and community leaders to amplify the impact of our educational initiatives. We see our students seamlessly transitioning from high school to the workforce and college, guided by a curriculum that aligns with industry demands and societal needs. Our commitment to innovation is reflected in state-of-the-art facilities and laboratories, fostering a culture of exploration and discovery. Above all, MG-TEC envisions instilling in each student a sense of purpose, resilience, and the belief that education is not merely a means to an end but a transformative journey that unlocks limitless possibilities for personal growth and positive community contributions.

Competitive:

As well as offering our MG-TEC students the opportunities to obtain industry leading certifications, we are also fostering a competitive environment with the development of a Cyber Club. This club is designed to put MG-TEC students to the test in an operationally competitive environment. In order to do this, the MG-TEC Cyber Club will compete in several Capture the Flag (CTF) competitions throughout the year against other schools. These competitions will not only foster a competitive environment, but also offer an intense learning opportunity and opportunity for collaboration with partnered colleges.

Information Systems Technology Program

- For the students that take part in our MG-TEC Lab School, the end state goal is to guarantee the Students an opportunity to earn Industry Leading Certifications dependent on their focus: Cybersecurity Foundations; IT Technical Support and Cloud Computing. By earning these certifications in Information Technology, MG-TEC is effectively placing its Students well above their peers when competing for employment in the IT industry.
- Some of these certifications include but are not limited to the following: CompTIA: Security +, Linux +, Professional A+ and Pentest +. All these certifications are paramount and held at high esteem within the Information Technology industry / community.
- Students will be able to begin their MG-TEC journey at the beginning of their sophomore year of High School. This will offer the student the best chance of success. Earning even one of the previously discussed certifications within the three-year period is a huge reinforcement to the student's future success in the workforce. As well, these certifications hold high esteem when added to a college application and bolster the student's likelihood of being accepted into Information Technology programs offered by 4-year colleges.

How is this Different from traditional VA Governor School Program?

Industry-Focused IT Certification:

- MG-TEC Lab School places a specific emphasis on preparing students for careers in Information Technology.
- The curriculum is tailored to help students earn industry-leading IT certifications such as Security+, Network+, Pentest+, A+, Linux+, and Cloud Computing.

Practical, Hands-On Learning:

- Unlike a traditional classroom setting, MG-TEC Lab School prioritizes hands-on, practical learning experiences.
- Students engage in real-world IT scenarios, ensuring they not only understand theoretical concepts but can apply them in practical situations.

Targeted for High School Students (10^{th} – 12^{th} Grade):

- MG-TEC Lab School is specifically designed for high school students in grades 10 through 12, providing a focused and age-appropriate learning environment per K-12 guidance.

Flexibility in Learning Environments:

- MG-TEC Lab School accommodates both on-site and remote learning through platforms like Canvas, allowing students to choose the format that best suits their needs.

Specific Focus on IT Career Pathways:

- MG-TEC Lab School aligns its curriculum with current and emerging trends in the IT industry, preparing students for successful careers in fields such as cybersecurity, network administration, and cloud computing.

Emphasis on Future-Ready Skills:

- Beyond certifications, MG-TEC Lab School cultivates essential future-ready skills, including critical thinking, problem-solving, and effective communication, ensuring students are well-rounded and prepared for the demands of the modern workforce.

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Success Pathway : Cybersecurity Focus

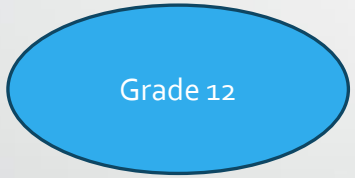
Initial MG-TEC Enrollment

Fall	Spring
ITP150 Python Programming	ITE152 Intro Digital Lit.

Resulting Certification
PCAP – Certified Associate in Python Programming

FALL	Spring
ITN260 – Network Security	ITE195 – Cert Exam Preparation
ITN101 – Intro to Networking	

Resulting Certifications
CompTIA – Security +
CompTIA – Network +



FALL	Spring
ITN170 – Linux System Administration	ITN261 – Continued
ITN261 – Network Attacks | Computer Crime	

The successful Student will graduate High School with 5 Industry Standard Certifications which will set them far ahead of their peers in obtaining employment.

This program will be incredibly successful if each Student obtains 2 of the 5 certifications of which opportunities are provided.

Student Professional Resume	Resulting Certifications
PCAP	CompTIA – Pentest +
Security +	CompTIA – Linux +
Network +	
Linux +	
Pentest +	

Day in the Life: Virtual

Morning Session: Virtual Instruction from High School

9:00 AM - 10:00 AM: ITP150 Python Programming

•The day begins with a one-hour virtual Python Programming class via Canvas.

•The sophomore, attending from their high school, actively engages with the instructor and peers during the virtual session.

•The on-site high school faculty member ensures a conducive learning environment and offers support as needed.

Break: Transition and Collaboration

10:00 AM - 10:15 AM

•A 15-minute break allows students to refresh before transitioning back to their regular high school classes.

•The high school faculty member facilitates discussions and ensures a smooth transition.

Rest of the Day: High School Classes

•The sophomore continues with their regular high school classes, incorporating the knowledge gained from the Python Programming session.

Afternoon: Independent Study and Homework

•In the afternoon, the student has the opportunity for independent study and completion of Python Programming assignments.

•The high school faculty member remains available during designated office hours to provide additional support.

Evening: Optional Python Programming Office Hours

7:00 PM - 8:00 PM

•An optional evening virtual office hours session is available for additional support in Python Programming.

•The high school faculty member is present to address questions and offer guidance during this optional session.

Day in the Life: Campus

Morning Session: Arrival and Preparation

8:30 AM - 9:00 AM

•The day begins with the student arriving on campus using the existing transportation support.

•There's a 30-minute period for arrival and preparation, allowing students to settle in and get ready for the day.

Morning Lab School Session: ITP150 Python Programming

9:00 AM - 10:30 AM

•The on-campus Python Programming class (ITP150) extends to 1 hour and 30 minutes.

•Students actively participate in hands-on learning, guided by the instructor and collaborating with peers.

Departure for High School

10:30 AM - 11:00 AM

•Following the on-campus session, students utilize existing transportation to return to their high school.

High School Classes

•The student continues with their regular high school classes for the rest of the day.

•The knowledge gained during the on-campus lab school session complements their overall high school curriculum.

Afternoon and Evening: Independent Study and Homework

•In the afternoon and evening, the student has the opportunity for independent study and completion of lab school assignments.

•The high school faculty member is available during designated office hours to provide additional support.

Optional Virtual Office Hours

7:00 PM - 8:00 PM

•An optional virtual office hours session is available for additional support in Python Programming.

•The high school faculty member is present to address questions and offer guidance during this optional session.

Delivery Method

Hy-Flex :

- Offers the ability of our Students to attend synchronous classes either on-site, or virtually during the prescribed timeline. Students who attend virtually will attend the live classes from their High School location and be afforded the same opportunity for asking questions and advice as the students that are on-campus. As well they will have the opportunity to "wargame" and "problem-solve" with each other in breakout rooms. This standard of communication will be paramount to the students learning and ability to work as a team.

Breakout Rooms:

- Even though some students will be on-campus and some at their home High Schools, virtual breakout rooms will be utilized by ALL students to ensure collaboration and team building. This will be absolutely essential to the success of the MG-TEC Program.

Priority Areas of Topic Interest

- **Cybersecurity:** Goal of preparing Students for employment in the realm of cyber on both offensive and defensive spectrums.
- **IT Support Operations:** Goal of preparing Students for employment with various organizations, able to render Intermediate support in Information Technology both by remote administration and telephonic assistance.
- **AWS Cloud Computing:** Goal of creating a Cloud architect, someone capable of on-boarding with any organization that utilizes a "Cloud" workspace / atmosphere. This direction will require several certifications that will place the Student well ahead of their peers.

Typical Income for Information Technology by County Versus Required Annual Income for 1 Adult with no Children

County / City	Required Annual	Typical Annual (IT)	Required w/ 1x Dep.
Alleghany County	$31,328	$110,039	$62,262
Bath County	$31,005	$110,039	$62,845
Rockbridge County	$31,538	$110,039	$63,896
Buena Vista City	$31,538	$110,039	$63,896
Buchanan County	$33,042	$110,039	$60,733

Federal poverty level for a family of 4 was $27,750 in 2022.

That's $13,590 for an individual

Factors that will affect individual income

- Education Level (Includes Certifications and Traditional Degrees)
- Skill Sets (Proof of Capability will be developed in the MG-TEC Program)
- Economic Development Frequency (Peaks and Valleys)
- Personality (Success is largely a choice and not something we fall into)

Cybersecurity Avenue (In priority order)

- CompTIA – Security +
- CompTIA – Linux +
- CompTIA – Network +
- CompTIA – PenTest +

Pay Scale Averages (All positions outlined are considered entry level)

Job Title	Salary Range 2023	Average 2023	Certification / Degree
Penetration Tester	$61k - $138k	$97,846	Cert + Associates
Cybersecurity Analyst	$53k - $116k	$78,505	Cert
InfoSec Analyst	$46k – $118k	$73,448	Cert
InfoSec Officer	$64k – 133k	$97,691	Cert + Associates

Information Technology Help Desk Authority

- CompTIA – A+
- CompTIA – IT Fundamentals
- CompTIA – Network +
- CompTIA – Security +
- CompTIA – Server +

- Pay Scale Averages (All positions outlined are considered entry level)

Job Title	Salary Range 2023	Average	Certification / Degree
Help Desk Tech	$32k - $58k	$41,196	Cert
Help Desk Specialist	$34k - $67k	$46,748	Cert + Capability
Help Desk Engineer	$32k - $62k	$45,715	Cert + Exp

AWS Cloud Computing

- CompTIA – Security +
- CompTIA – Linux +
- CompTIA – Network +
- CompTIA – Cloud +
- Amazon Web Services – AWS Certified Cloud Practitioner (If Ready)

- Pay Scale Averages (All positions outlined are considered entry level)

Job Title	Salary Range 2023	Average	Certification / Degree
Cloud Solutions Architect	$80k - $161k	$127,403	Cert + Degree
Cloud Solutions Engineer	$60k - $155k	$105,000	Cert (Degree Preferred)
Network Engineer	$50k - $108k	$73,257	Cert