

Applications & Research Laboratory

PROFILE

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The Applications and Research Laboratory (ARL) is the career and technical center for Howard County Public School System high school students. The philosophy behind the Career Academy Program is to prepare students for careers, rather than jobs or employment. The program offers students an opportunity to meet and work with professionals from career fields while building an academic foundation and skill base to be college and career ready. Business partnerships and advisory boards are pivotal in the success of these programs. Students from all high schools and Homewood School can enroll in programs at the ARL. Students use industry standard software and technology through project-based instruction. Students have the opportunity to earn industry certifications and college credits while attending the ARL, preparing them for success in all postsecondary pathways and opportunities.

“Extraordinary Learning Through Experience”

The centralized career academies at the ARL will engage students through real-world experiences and 21st century industry standards to be college and career ready, empowering lifelong learners and qualified professionals who will thrive in a dynamic world.

Karl J. Schindler, Principal, ARL



Career Academies @ ARL

- Academy of Finance
- Academy of Health Professions
- Aerospace Engineering: Project Lead the Way (PLTW) Academy
- Agricultural Science Academy
- Animation & Interactive Media Academy
- Apprenticeship Maryland Academy
- Architectural Design Academy
- Automotive Technology Academy
- Biotechnology Academy
- Civil Engineering: Project Lead the Way (PLTW) Academy
- Construction
- CyberSecurity Networking Academy
- Graphic Design Academy
- Heating, Ventilation and Air Conditioning Academy

Note: The following academies are offered at each high school:

- Accounting Academy
- Apprenticeship Maryland Academy
- Business Management Academy
- Career Research and Development Academy
- Computer Programming Academy
- Culinary Science Academy
- Engineering: Project Lead the Way
- JROTC Academy (AHS, HoHS, OMHS only)
- Marketing Academy
- Teacher Academy of Maryland

Special Programs

- Early College Program-Cyber Security
- FFA (Formerly--Future Farmers of America)

Updated January 2023

Accomplishments

Academy of Finance

- Podcast Library created, produced, recorded and released on financial topics relevant to students as they transition from school to work/college.
- 1st Place – Personal Finance Challenge, 2021
- 2nd Place – National Personal Finance Challenge, 2022
- NAF Certification with successful internship completion
- Competed regionally in Stock Market Game and Wharton School of Business competition

Academy of Health Professions

- Programs in Certified Nursing Assistant, Certified Clinical Medical Assistant, Physical Rehabilitation, and Emergency Technician.
- Students who complete the academy obtain American Heart Association's Basic Life Support certification.
- 12th grade students complete internships, clinical, or patient care experience.
- Partnerships with Howard County General Hospital, Johns Hopkins Bayview and Howard CC.

Aerospace Engineering

- The Project Lead the Way Aerospace Engineering Academy teaches students that real-world problems often have multiple solutions with many pathways to achieve success and realize excellence. With engaging course work that includes Engineering Essentials, Introduction to Engineering, Principles of Engineering, Digital Electronics, and Aerospace Engineering, students explore possibilities, experiment, learn from failure, and turn ideas into reality. The Aerospace Engineering Academy encourages students to adopt an Engineering Problem-Solving mindset, engaging them in compelling, real-world challenges that help them become better communicators, collaborators, and thinkers.

Agricultural Sciences

- 21 students earned transcribed credits to use at select colleges or universities – 2021, 2022
- Three students participated in the 2022 National FFA Convention.
- Bronze Award– National FFA Prepared Speech Contest.
- Senior student participated in the 2022 Maryland Farm Bureau NextGen Summit.
- The FFA led the ARL in collecting over 1,000 pounds of canned goods for local families in need.
- 38 FFA members participated in the Regional Leadership Conference at UMCP.
- Seven students attended the Howard County Farm Bureau Legislative Dinner.

- 2 Students participated in the 2022 Maryland FFA State Convention.
- Several students were awarded Maryland FFA and National FFA Scholarships.

Animation and Interactive Media Academy

- Students have the opportunity to combine creative abilities with technical skills using industry standard techniques and software. They work independently and in teams in problem solving, portfolio development, and artistic promotion. Topics include 3D graphics, the artistic and creative aspects of game development, 3D animation, techniques used in 2D Animation, narrative and non-narrative storytelling, video production, and architectural simulation
- Students gain the ability to pursue internships from organizations ranging from VR Gaming Companies to NSA. Students go on to a variety of liberal arts and fine arts colleges. Alumni work at organizations such as CNN, Johns Hopkins, Netflix, PBS Kids, 20th Century Fox Lightstorm Entertainment, Pixar, and several local digital art studios in fields ranging from entertainment to science.

Apprenticeship Maryland Academy

- Electrical students earned OSHA 10, First Aid and CPR certifications and completed 1st year of registered apprenticeship at IEC
- Direct Support students earned DSP level 1 certification
- All students offered full-time employment.

Architectural Design Academy

- Students create architecturally based portfolios for college submissions.
- Students can earn professional certification for industry-standard Autodesk AutoCAD and Revit.
- Participate in college design competitions.
- Students work on real-world design projects.

Automotive Technology Academy

- Students earned multiple certifications of training through Ford Motor Co.
- Seniors earned Digital Multi-Meter certification through NC3 and Snap-On tools.
- Students earned ASE Automotive certifications in all content areas.
- Students earned certification in Automotive Service Safety through S/P2.
- Students earned certification in On the car-brake lathe technology through Pro-Cut.

Biotechnology Academy

- Internships with local research scientists at locations such as UMBC, UMD school of Medicine, Department of Agriculture and Johns Hopkins have led to publications in peer reviewed journals and cDNA published in nationally recognized GenBank.
- Won a Bright Minds Grant and Samsung "Solve for Tomorrow" award based on Senior capstone project with "in the field" data collecting and utilizing state of the art techniques to study Omega-3 fatty acids produced by Chesapeake Bay microbes
- BACE certification (Biotechnician Assistant Certification Exam); academy success is above the national average.
- GT course; students successful on AP Biology and Chemistry exams
- Biotechnology II GT students receive scholarships, awards and tuition for college.

Construction

- Curriculum is designed to integrate the academic study of math, communications, blueprint reading, CAD, and office software into practical construction applications.
- Focuses on industry-compliant methods, technology and safety standards.
- Students design, plan, direct, budget and build a residential building.
- Students gain knowledge and skills to prepare them for various careers in construction including project management and project engineering.
- Internships provide real-world applications of knowledge and skills learned in the classroom.
- Students earn national certification through online text and national standards testing provided by the National Center for Construction Education Research (NCCER)
- An excellent foundation for continuing education in the industry with majors offered in Construction Management, Architecture and Engineering.

CyberSecurity Networking Academy

- Seniors participated in the Air Force Association's CyberPatriot VII competition, Fall 2021.

Graphic Design Academy

- 81% pass rate of PrintED Graphic Design Student Certification
- 43% submission rate of 2-D Art and Design AP Exam
- 100% pass rate of 2-D Art and Design AP Exam

Heating, Ventilation and Air Conditioning

- The HVAC Career Academy is an academically rigorous NCCER accredited program requiring the application of knowledge-based skills.
- 1st year students are provided the opportunity to develop a foundation of skills applicable to skilled-trades careers in general and to earn the NCCER's Core Construction Certification.
- 2nd year students focus on the acquisition of fundamental HVAC skills facilitating career options in HVAC and to earn the NCCER's HVAC Level 1 Certification.
- 2nd year students are able to acquire OSHA-10 safety certification.
- 1st and 2nd year students regularly host HVAC industry professional guest speakers.